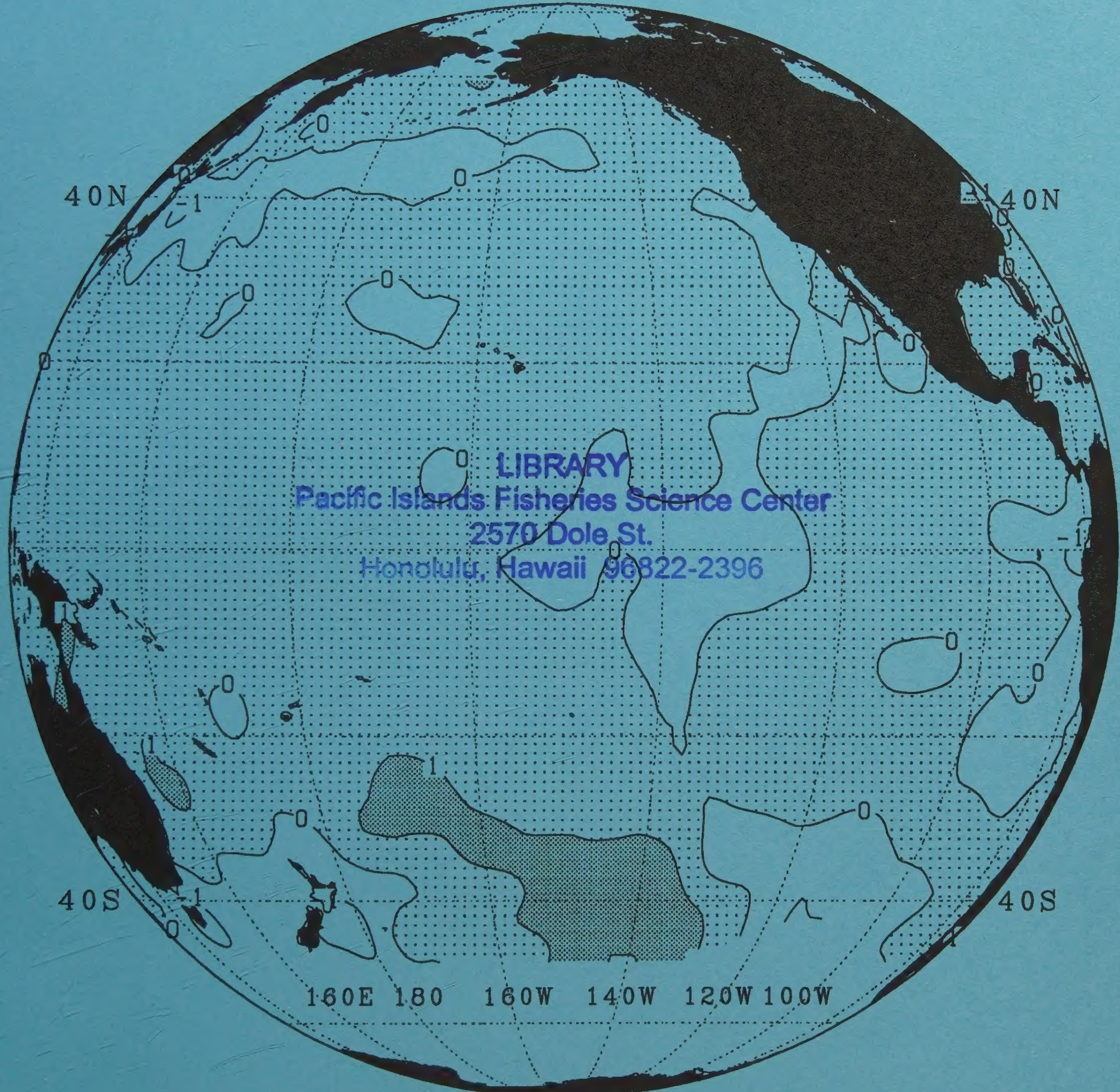
(3)

ISSN 1348-5059

気象庁海洋月報

Monthly Ocean Report
March 2004 (No. 135)



Climate and Marine Department
Japan Meteorological Agency

気象庁 気候・海洋気象部

平成16年3月

気象庁海洋月報は、気象庁 気候・海洋気象部 海洋気象情報室で作成しています。
本月報に関する問い合わせは、
〒100-8122 東京都千代田区大手町１-３-４ 気象庁 気候・海洋気象部 海洋気象情報室まで。
電 話 (03) 3212-8341 (内線 5127、5166)
ＦＡＸ (03) 3211-3047
電子メール ocean@climar.kishou.go.jp

Monthly Ocean Report is prepared by the Office of Marine Prediction, Climate and Marine Department, Japan Meteorological Agency.

Correspondence relating to this report may be directed to :

Ippei Eguchi
Head, Office of Marine Prediction
Climate and Marine Department, Japan Meteorological Agency
1-3-4 Ote-machi, Chiyoda-ku, Tokyo 100-8122 Japan
Facsimile: +81-3-3211-3047
e-mail : ocean@climar.kishou.go.jp

表紙は、2004 年 3 月の太平洋の月平均海面水温偏差図です。
陰影部は、平年より高温の海域を示しています。

The figure on the front cover shows the monthly mean SST anomalies for March 2004 in the Pacific Ocean.
Areas of positive anomalies are shaded.

目　次

Table of Contents

海況の特徴（２００４年３月）

日本近海の海況

海面水温は、三陸沖から関東の東にかけて平年より1℃以上低く、常磐沖では-2℃を超える負偏差が見られた。一方、宗谷海峡の西では平年より1℃以上高かった。深さ100mで5℃以下の親潮系冷水の沿岸よりの分枝は、平年より大きく南下し、福島県沖まで達していた（第４図、第６図）。

黒潮は、月を通して九州の東を離岸して北上し、四国から紀伊半島にかけて接岸した後、東海沖を東北東に流れていた。その後、上旬は三宅島の北を、中・下旬は三宅島付近を通過した後、房総半島沖を北東に流れていた（第９図）。

太平洋の海況

太平洋赤道域の海面水温は、135° Eから165° Eにかけてと120° Wから105° Wにかけて+0.5℃を超える正偏差が見られた。一方、155° Wから125° Wにかけてと100° W以東で負偏差が見られた。

北太平洋の海面水温は、フィリピンの東、日付変更線の35° N付近，及び 15° Nから40° Nの160° Wから130° Wにかけて平年より0.5℃以上高かった（第１７図）。

Highlights March 2004

Seas adjacent to Japan

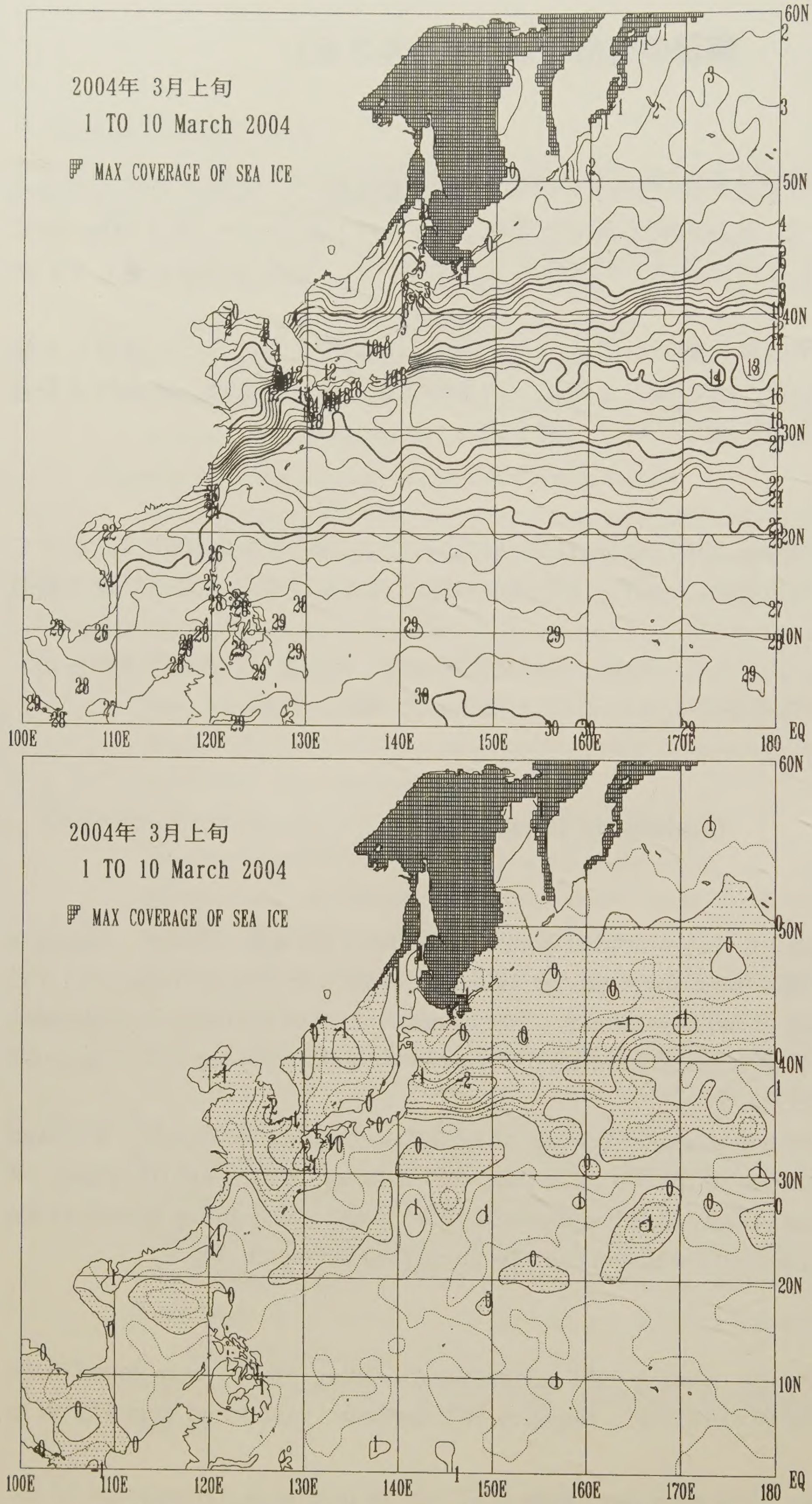
SSTs were more than 1℃ below normal from off Sanriku to the east of Kanto. Negative SST anomalies exceeding -2℃ were found in the seas off Joban. SSTs were more than 1℃ above normal in the seas west of the Soya Straits. The coastal branch of the Oyashio cold water, which was at the depth of 100 meters and less than 5℃, extended significantly southward up to off Fukushima prefecture (Fig. 4, Fig. 6).

The Kuroshio flowed northward far off east of Kyushu throughout the month. It flowed close to the coasts from Shikoku to the Kii Peninsula; then it flowed ENE-ward off Tokai. It passed north of Miyake Island in early March and passed near Miyake Island during the rest of the month. And it flowed NE-ward off the Boso Peninsula throughout the month (Fig. 9).

Pacific Ocean

In the equatorial Pacific, positive SST anomalies exceeding +0.5℃ were found from 135°E to 165°E and from 120°W to 105°W. Negative SST anomalies were found from 155°W to 125°W and east of 100°W.

In the North Pacific, SSTs were more than 0.5℃ above normal in the seas east of the Philippine Islands, around 35°N near the date line, and from 160°W to 130°W between 15°N and 40°N (Fig. 17).



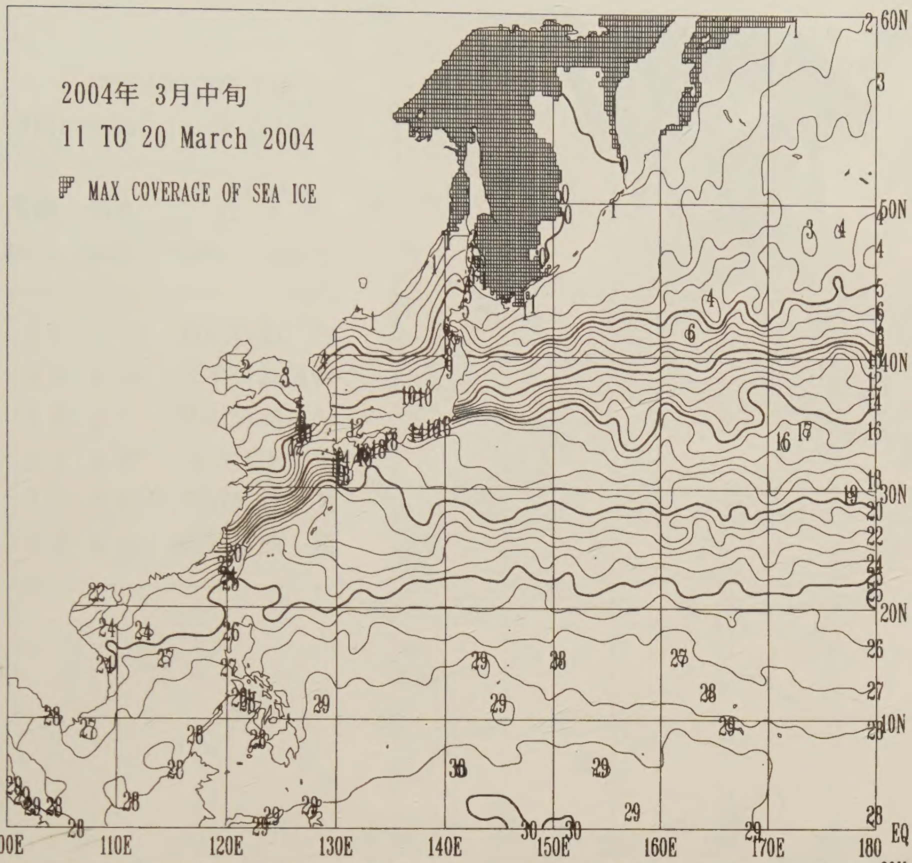
旬平均沿岸水温(℃)
Coastal Water Temperature

地点名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣(47918)	22.0	0.3
御前崎(47655)	10.6	-0.8
小名浜(47598)	7.7	-1.3
宮　古(47585)	7.4	1.0
江　差(47428)	5.8	0.0
浜　田(47755)	11.3	-0.5

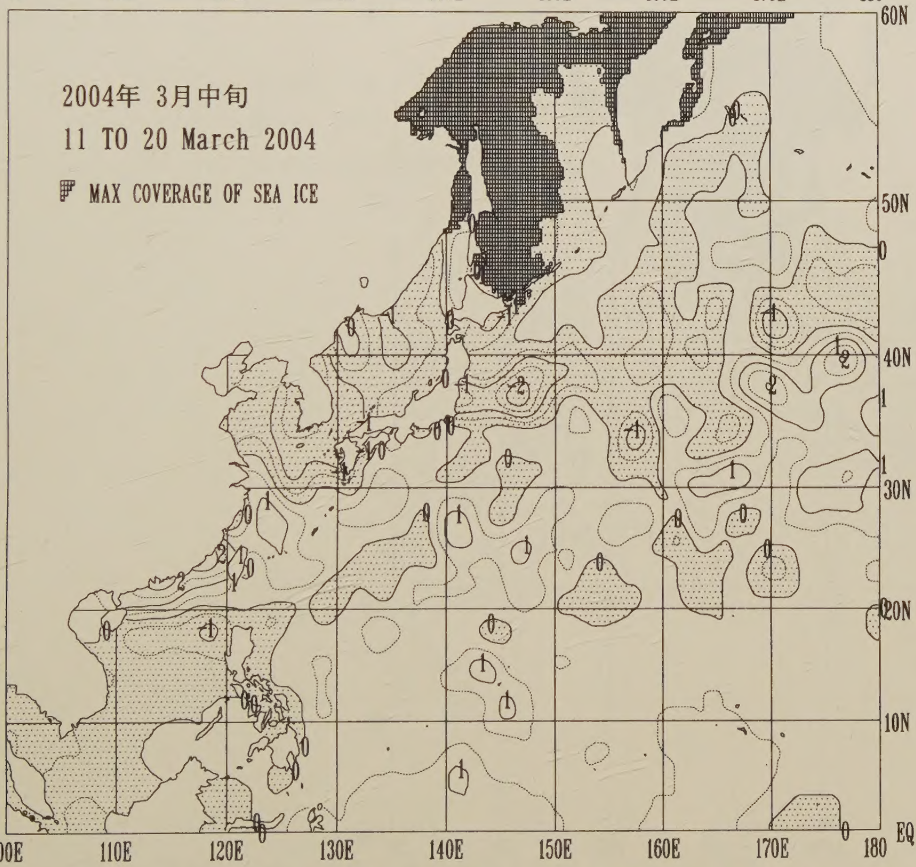
第1図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(2004年 3月上旬)

Fig.1 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 1st ten-day period in March 2004. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.

Ten-day mean SST & Anomalies

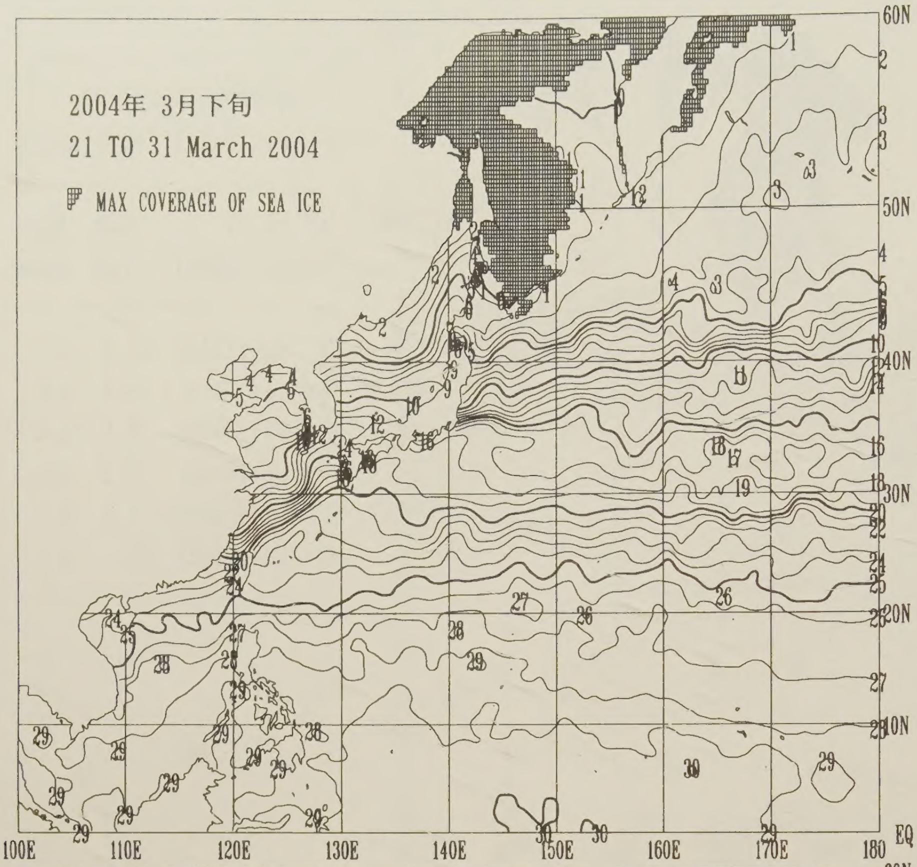


旬平均沿岸水温(℃) Coastal Water Temperature		
地点名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣(47918)	23.3	0.9
御前崎(47655)	13.2	1.0
小名浜(47598)	8.6	-0.4
宮　古(47585)	6.5	0.3
江　差(47428)	7.5	1.4
浜　田(47755)	13.1	0.7

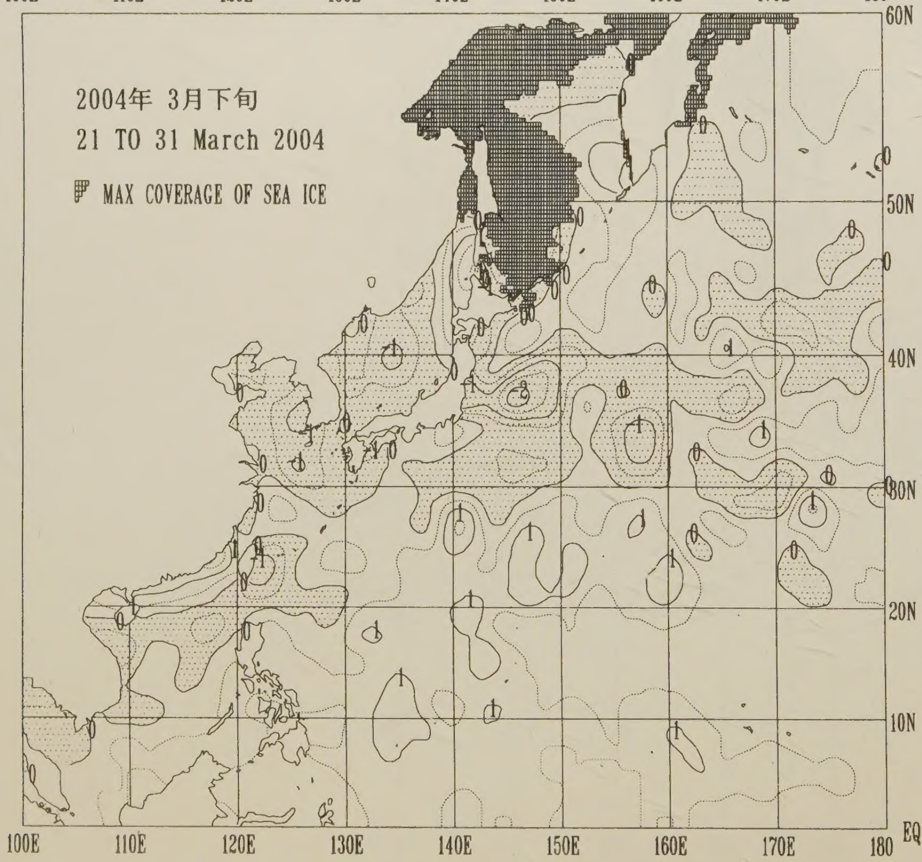


第2図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(2004年 3月中旬)

Fig. 2 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 2nd ten-day period in March 2004. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.

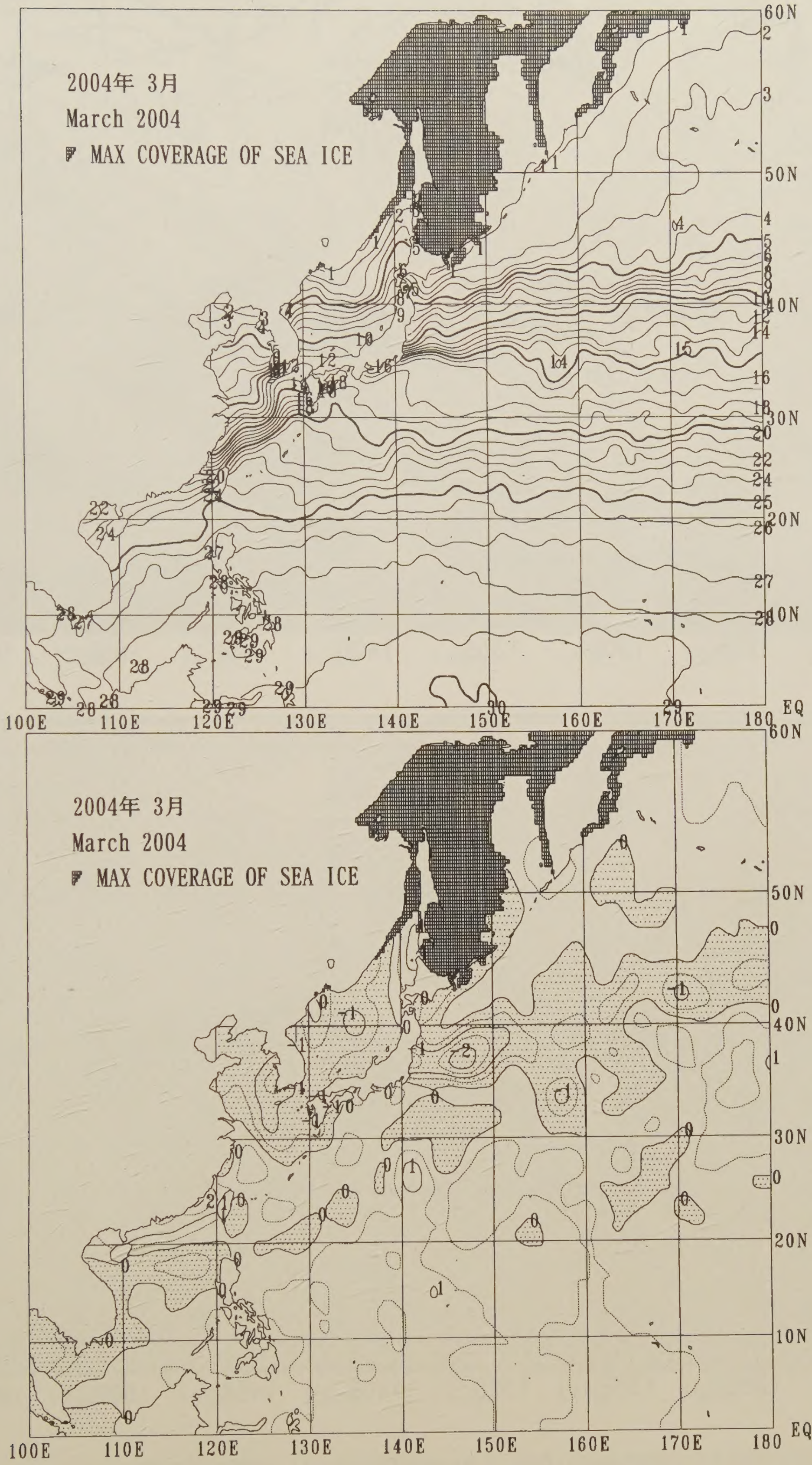


旬平均沿岸水温(℃) Coastal Water Temperature		
地点名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣(47918)	23.1	0.2
御前崎(47655)	13.4	0.4
小名浜(47598)	8.5	-0.6
宮　古(47585)	7.2	1.0
江　差(47428)	8.5	1.8
浜　田(47755)	13.8	0.9



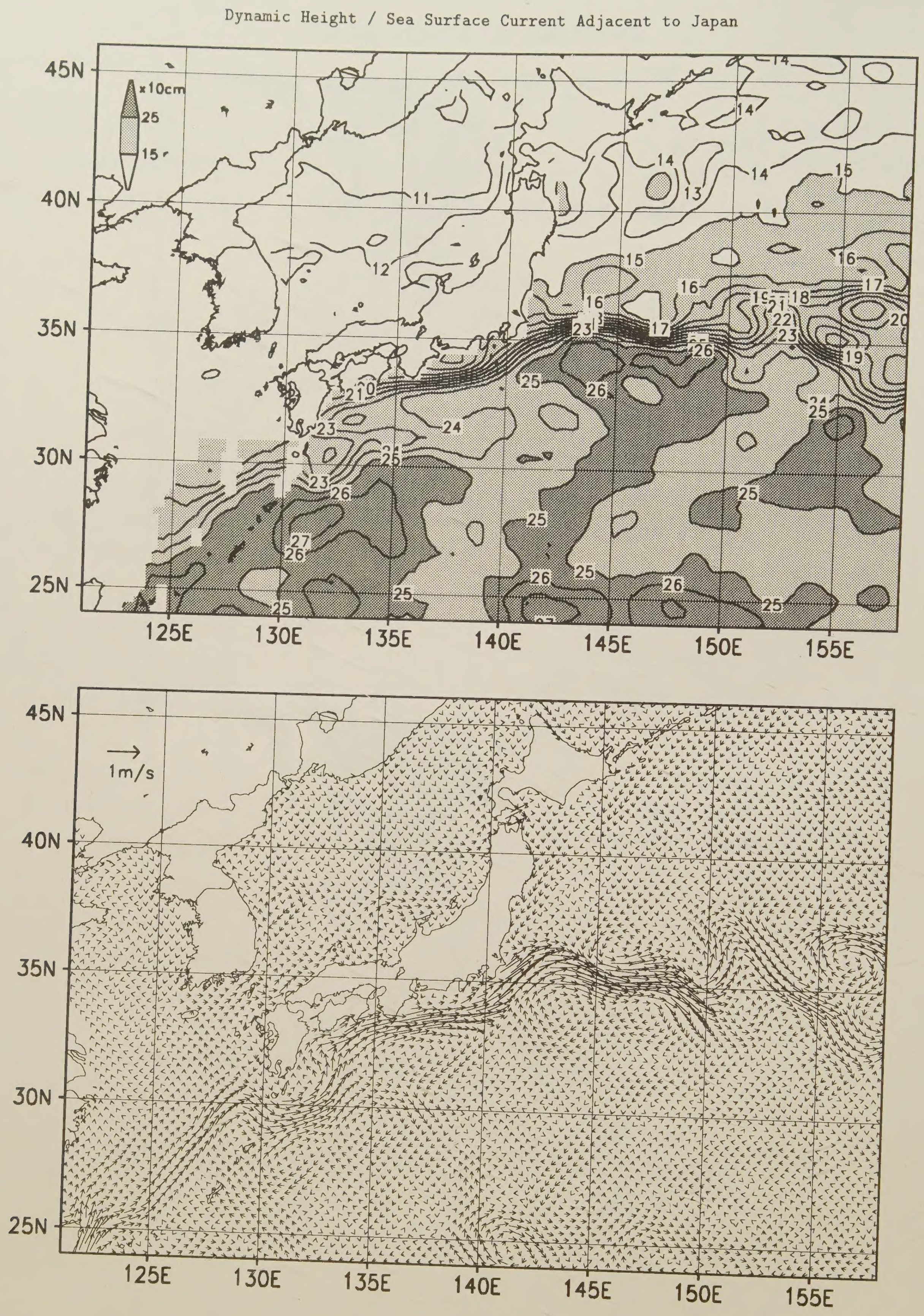
第3図 北西太平洋旬平均海面水温図(上)及び偏差図(下) (2004年 3月下旬)

Fig. 3 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 3rd ten-day period in March 2004. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.



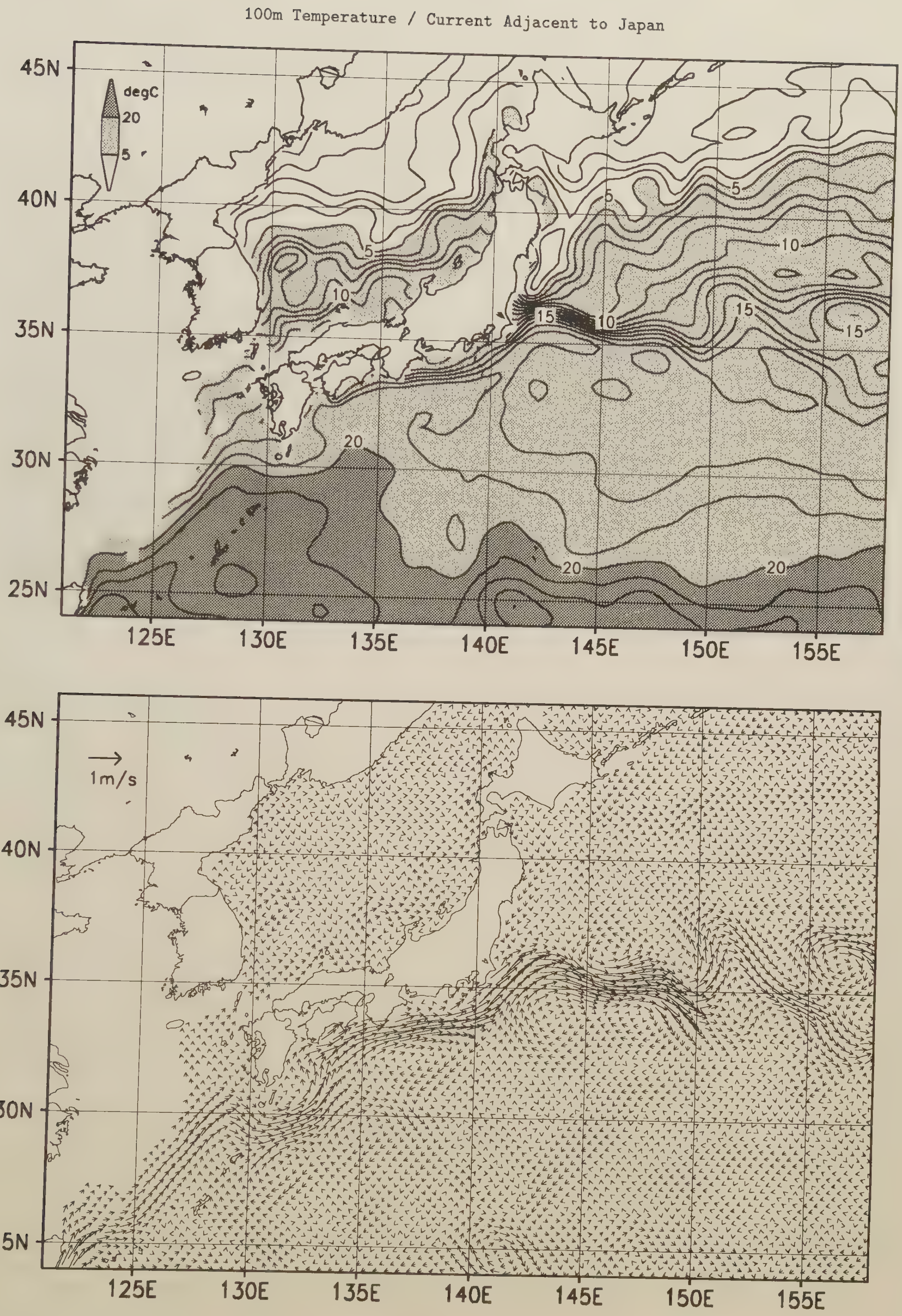
第4図 北西太平洋月平均海面水温図(上)及び偏差図(下) (2004年 3月)

Fig. 4 Monthly mean SST (top) and anomalies (bottom) in the western North Pacific for March 2004. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.



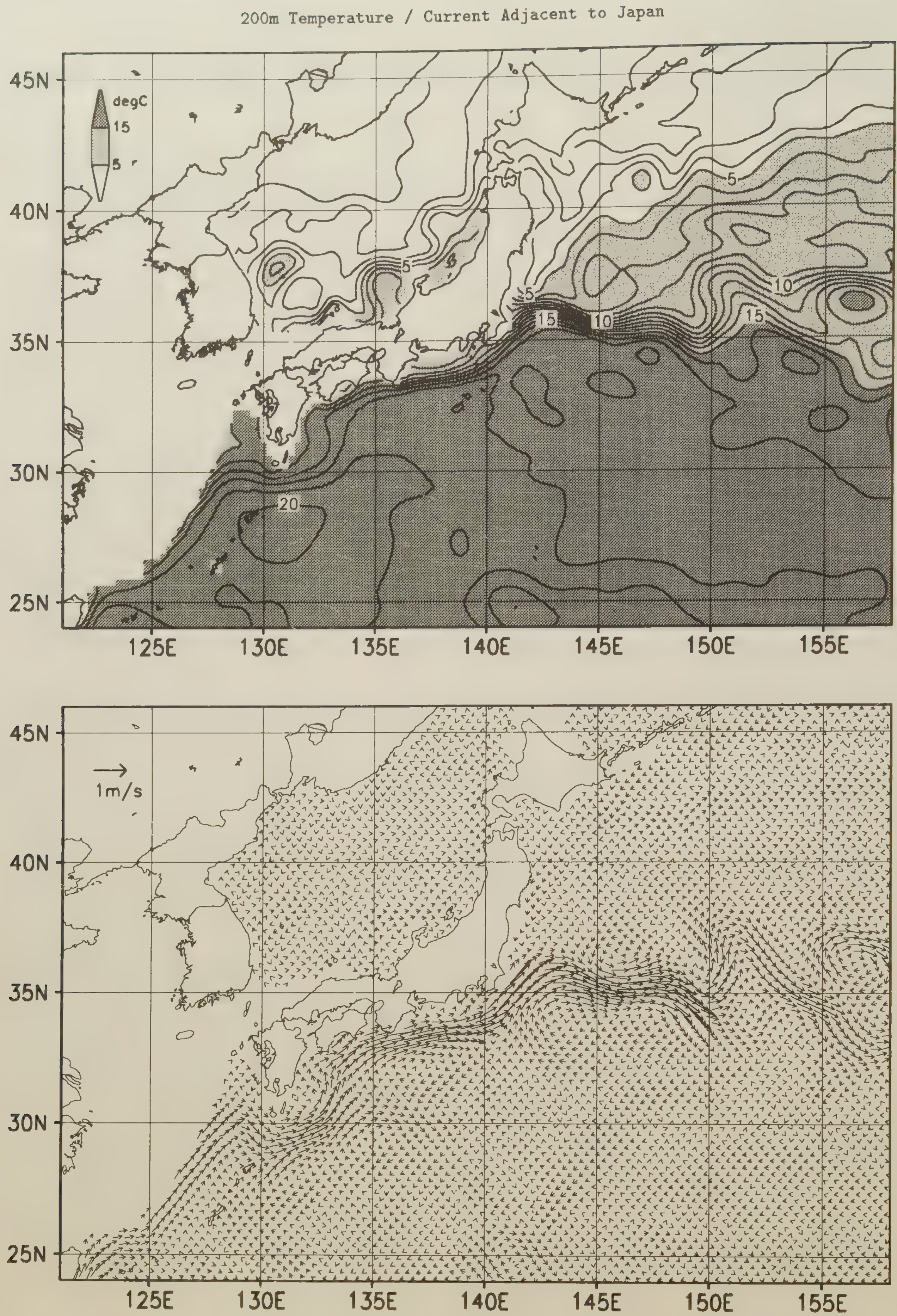
第5図　日本近海月平均海面高度分布図(上)と海面海流図(下)（2004年3月）
（海洋総合解析システムによる）

Fig. 5　Monthly mean sea surface height (top) and current (bottom) in seas adjacent to Japan for March 2004. Contour interval is 10cm (top). (calculated by the Ocean Comprehensive Analysis System)



第6図　日本近海月平均表層水温図（上）と表層海流図（下）（深さ 100 m）（2004 年 3 月）
（海洋総合解析システムによる）

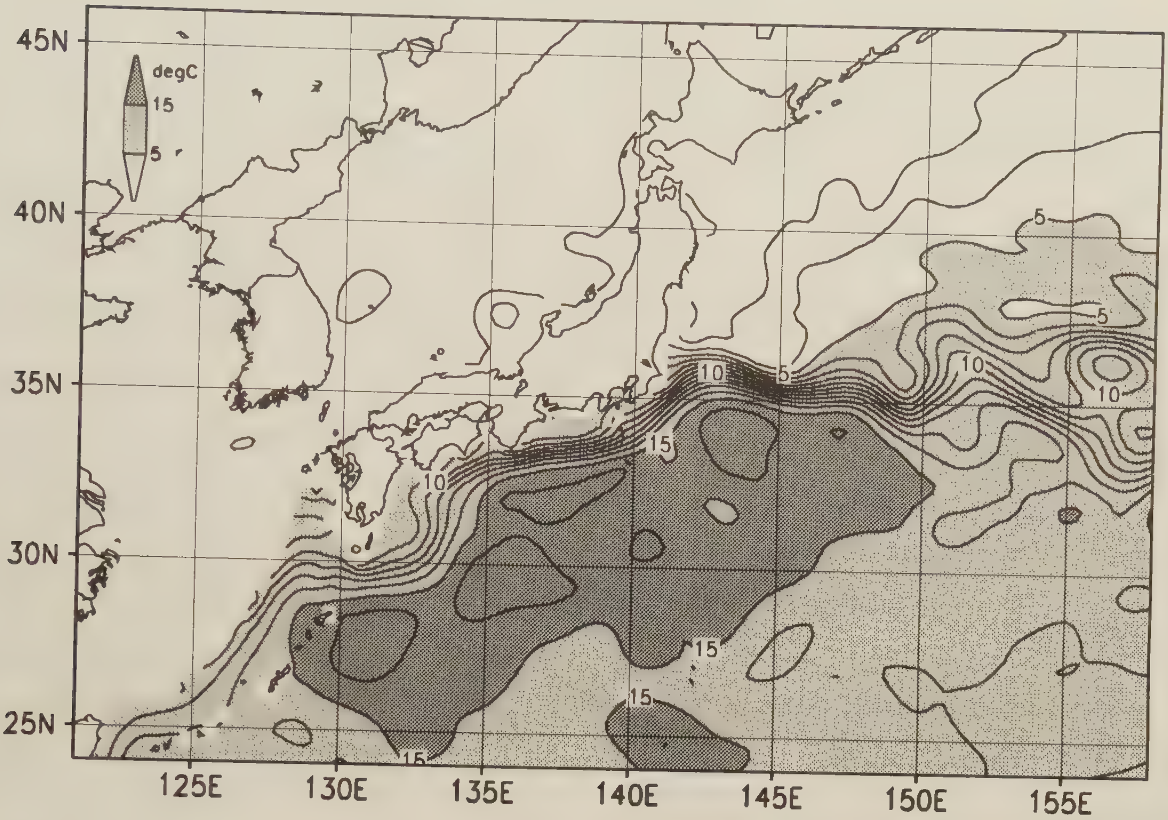
Fig. 6　Monthly mean subsurface (100 m) temperature (top) and current (bottom) in seas adjacent to Japan for March 2004. Contour interval is 1 ℃ (top). (calculated by the Ocean Comprehensive Analysis System)

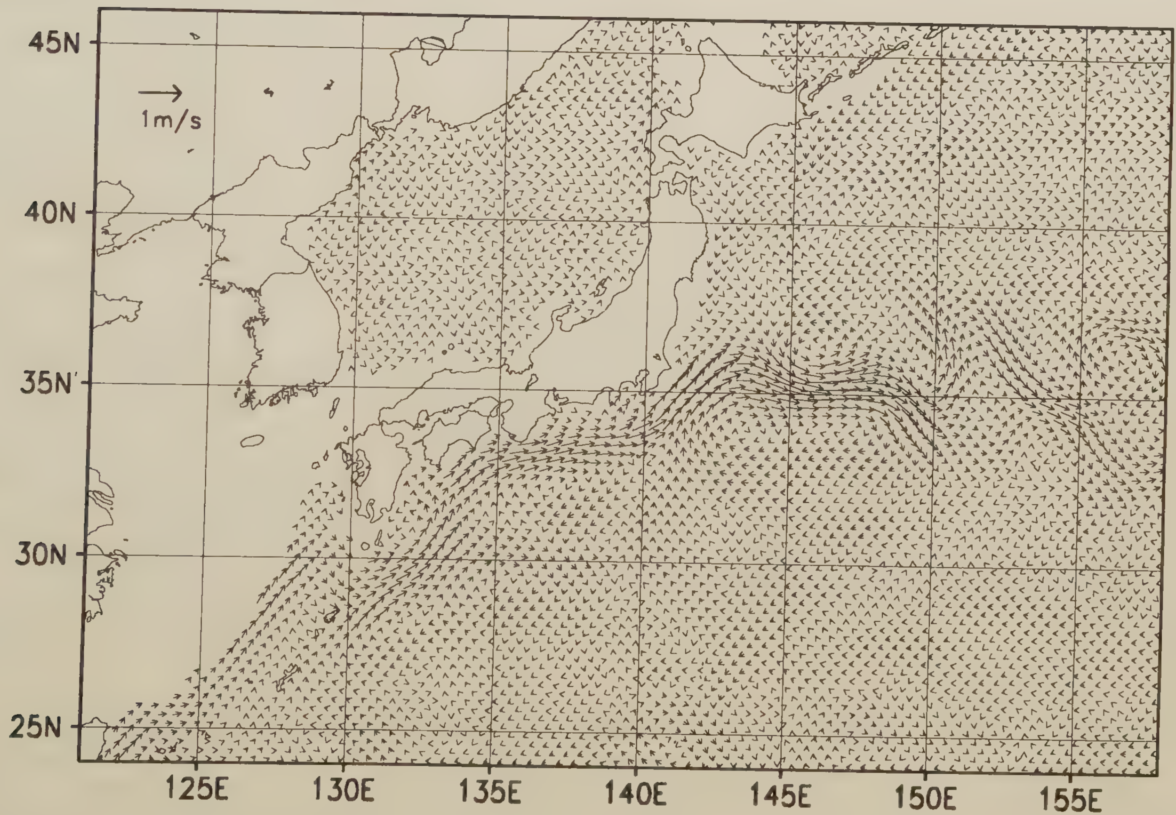


第７図　日本近海月平均表層水温図（上）と表層海流図（下）（深さ 200 m）（2004 年 3 月）
（海洋総合解析システムによる）

Fig. 7　Monthly mean subsurface (200 m) temperature (top) and current (bottom) in seas adjacent to Japan for March 2004. Contour interval is 1 ˚C (top). (calculated by the Ocean Comprehensive Analysis System)

400m Temperature / Current Adjacent to Japan





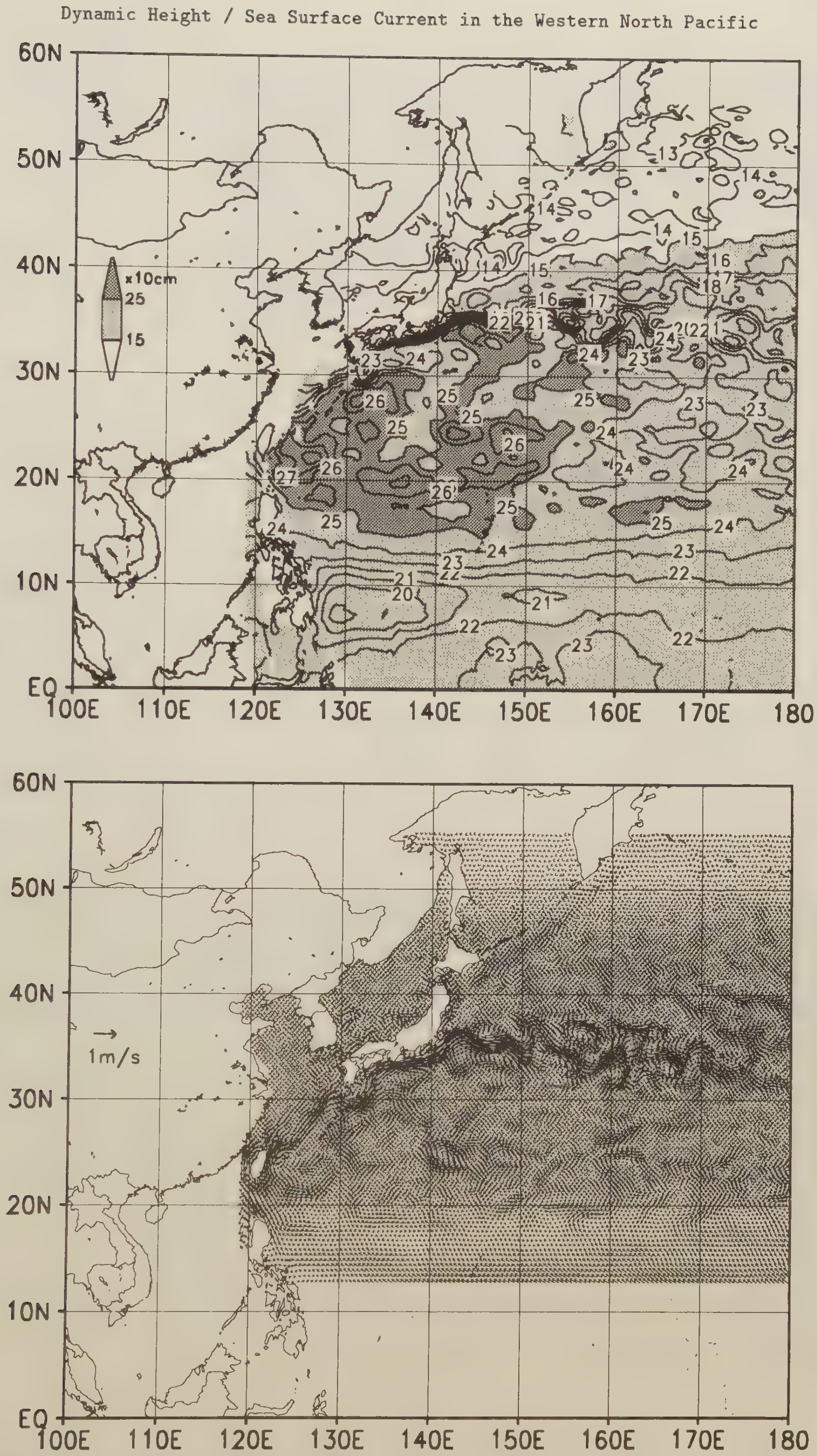
第 8 図　日本近海月平均表層水温図（上）と表層海流図（下）（深さ 400 m）（2004 年 3 月）
（海洋総合解析システムによる）

Fig. 8　Monthly mean subsurface (400 m) temperature (top) and current (bottom) in seas adjacent to Japan for March 2004. Contour interval is 1 ℃ (top). (calculated by the Ocean Comprehensive Analysis System)



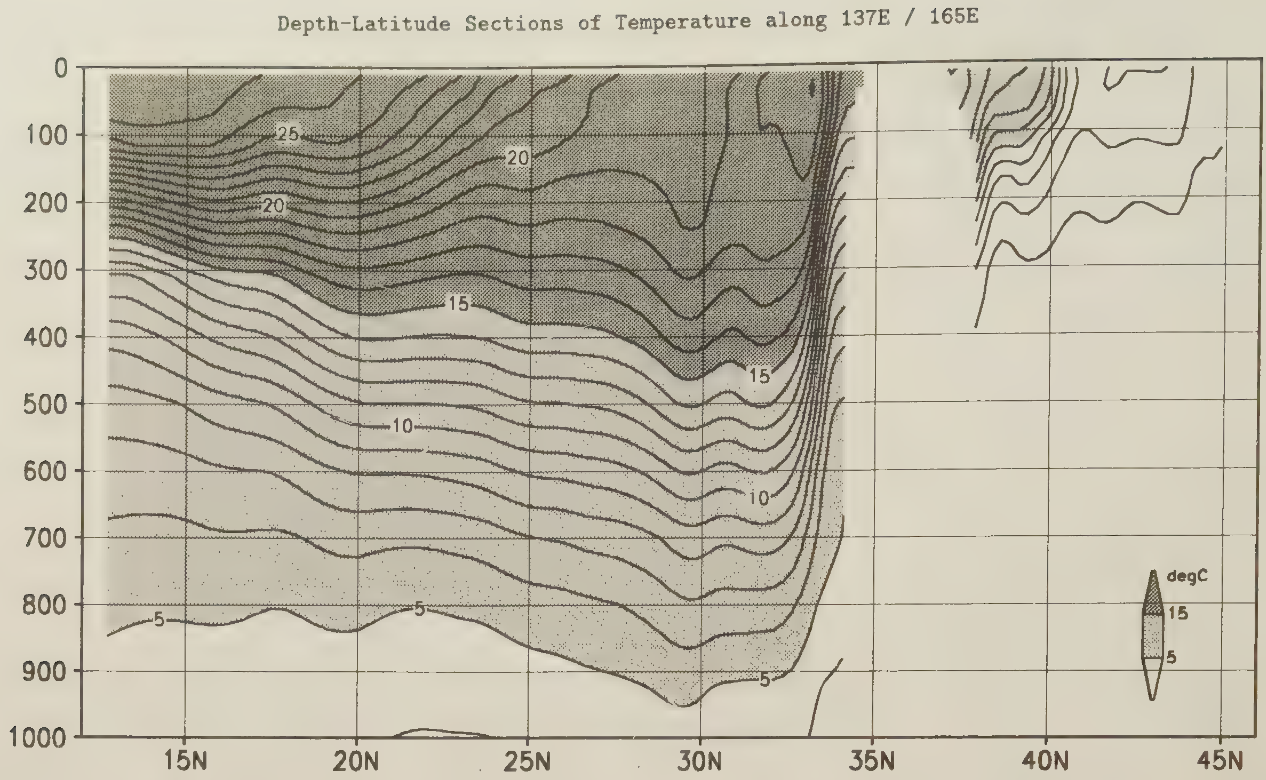
第9図 旬別黒潮流軸図

Fig. 9 Location of the Kuroshio axis



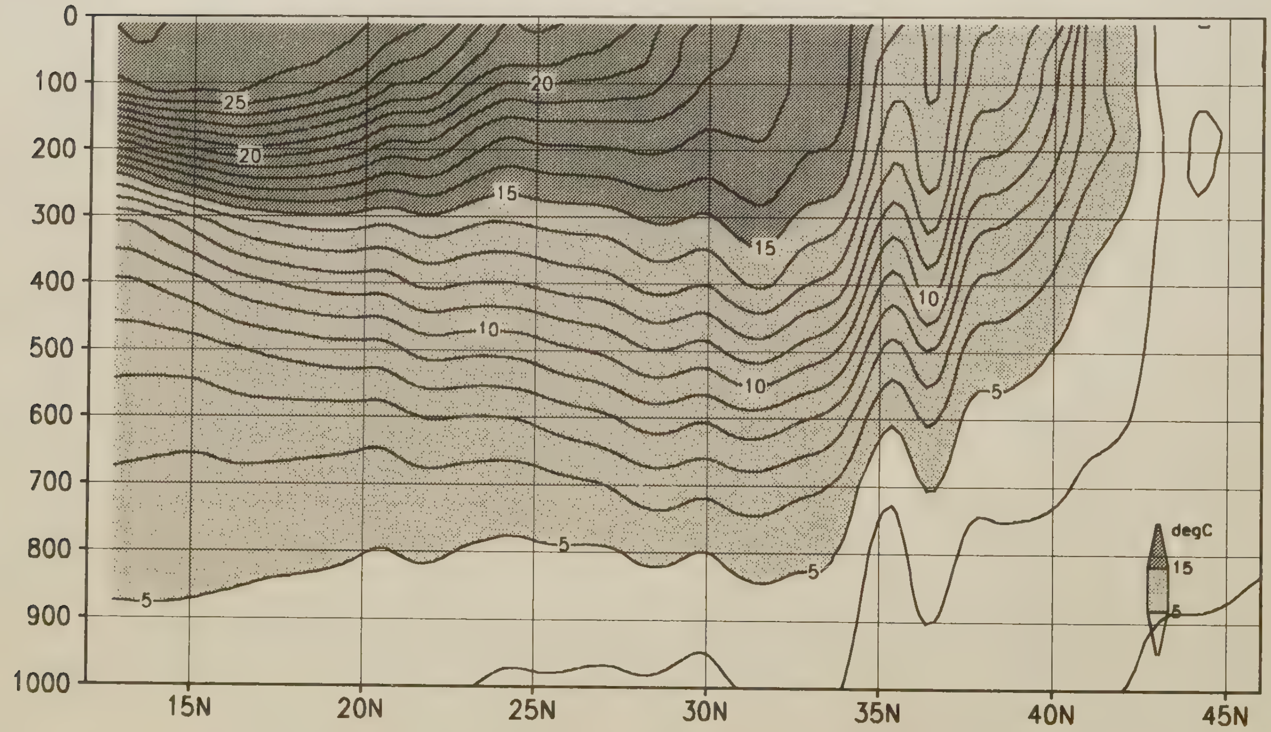
第 10 図　北西太平洋月平均海面高度分布図 (上) と海面海流図 (下)　(2004 年 3 月)
（海洋総合解析システムによる）

Fig. 10　Monthly mean sea surface height (top) and current (bottom) in the western North Pacific for March 2004. Contour interval is 10cm (top). (calculated by the Ocean Comprehensive Analysis System)



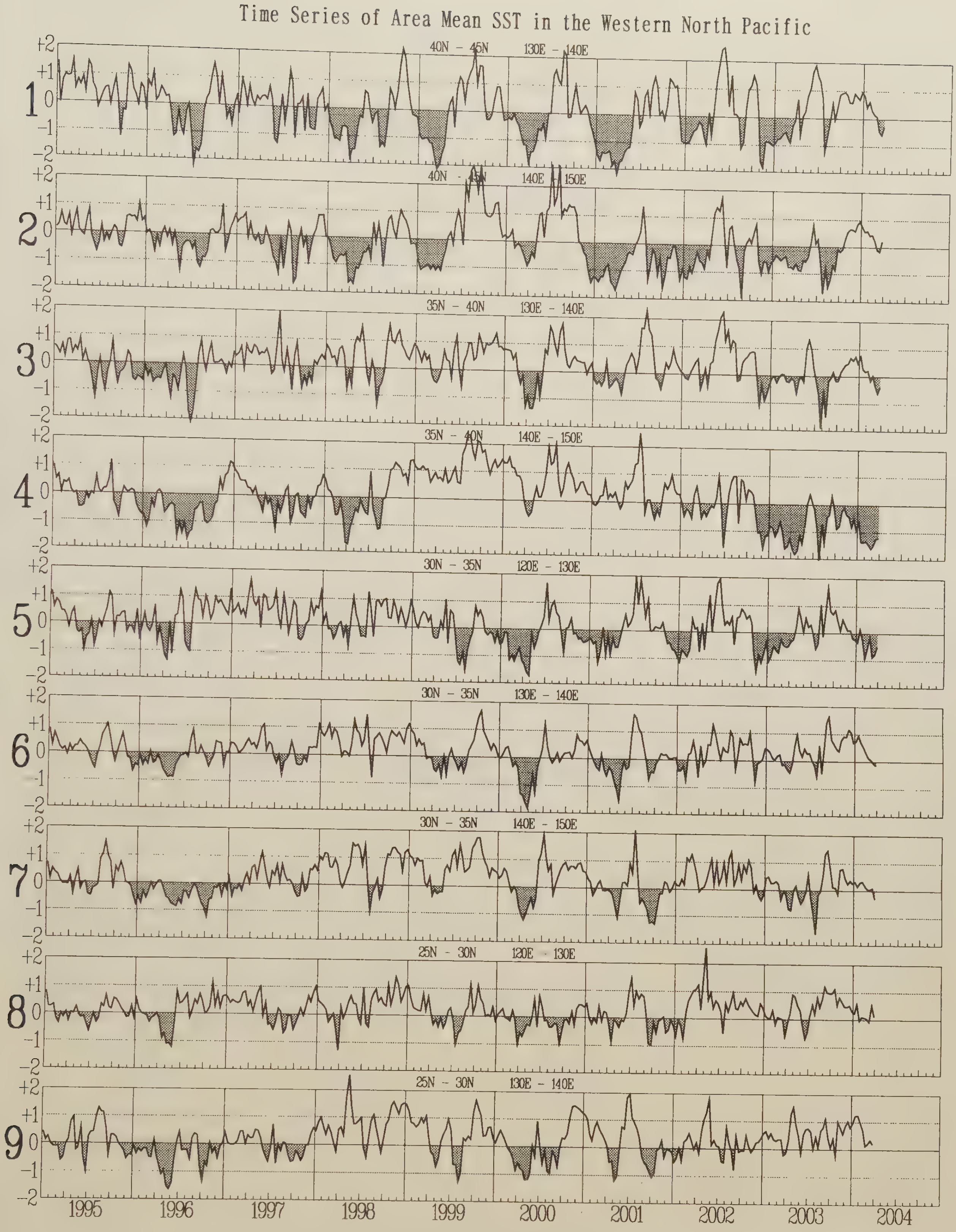
第 11 図　東経 137° 線に沿う月平均表層水温の鉛直断面図 （2004 年 3 月）
（海洋総合解析システムによる）

Fig. 11　Vertical cross section of monthly mean temperature along 137 °E for March 2004. Contour interval is 1 °C. (calculated by the Ocean Comprehensive Analysis System)



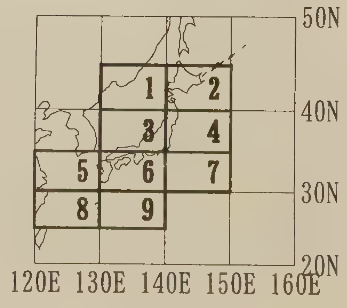
第 12 図　東経 165° 線に沿う月平均表層水温の鉛直断面図 （2004 年 3 月）
（海洋総合解析システムによる）

Fig. 12　Vertical cross section of monthly mean temperature along 165 °E for March 2004. Contour interval is 1 °C. (calculated by the Ocean Comprehensive Analysis System)

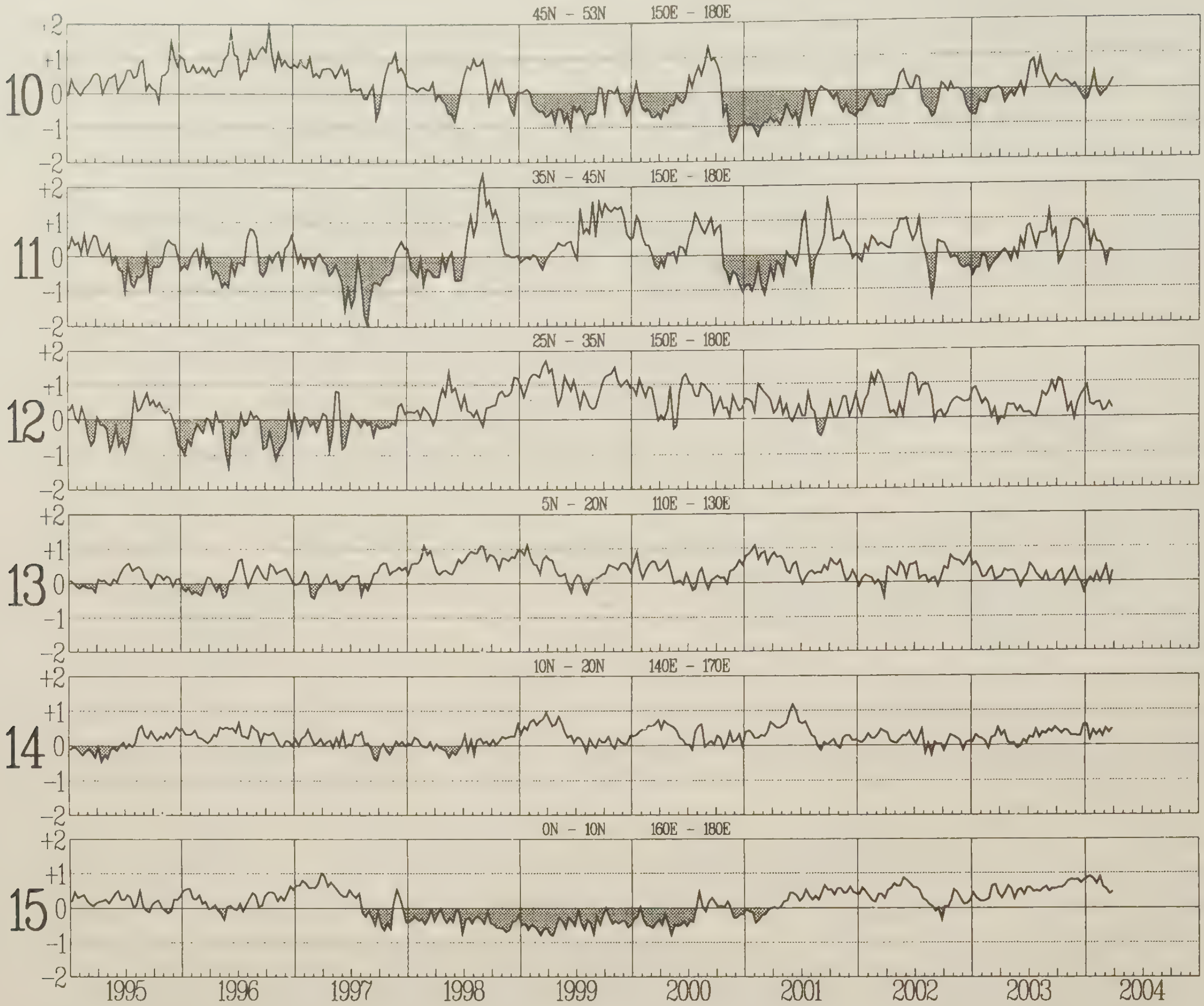


第13図　海域別旬平均海面水温平年偏差時系列図

Fig. 13 Time series of the ten-day mean SST anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1971-2000).

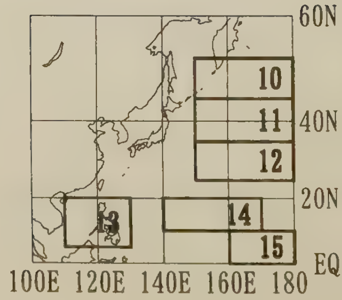


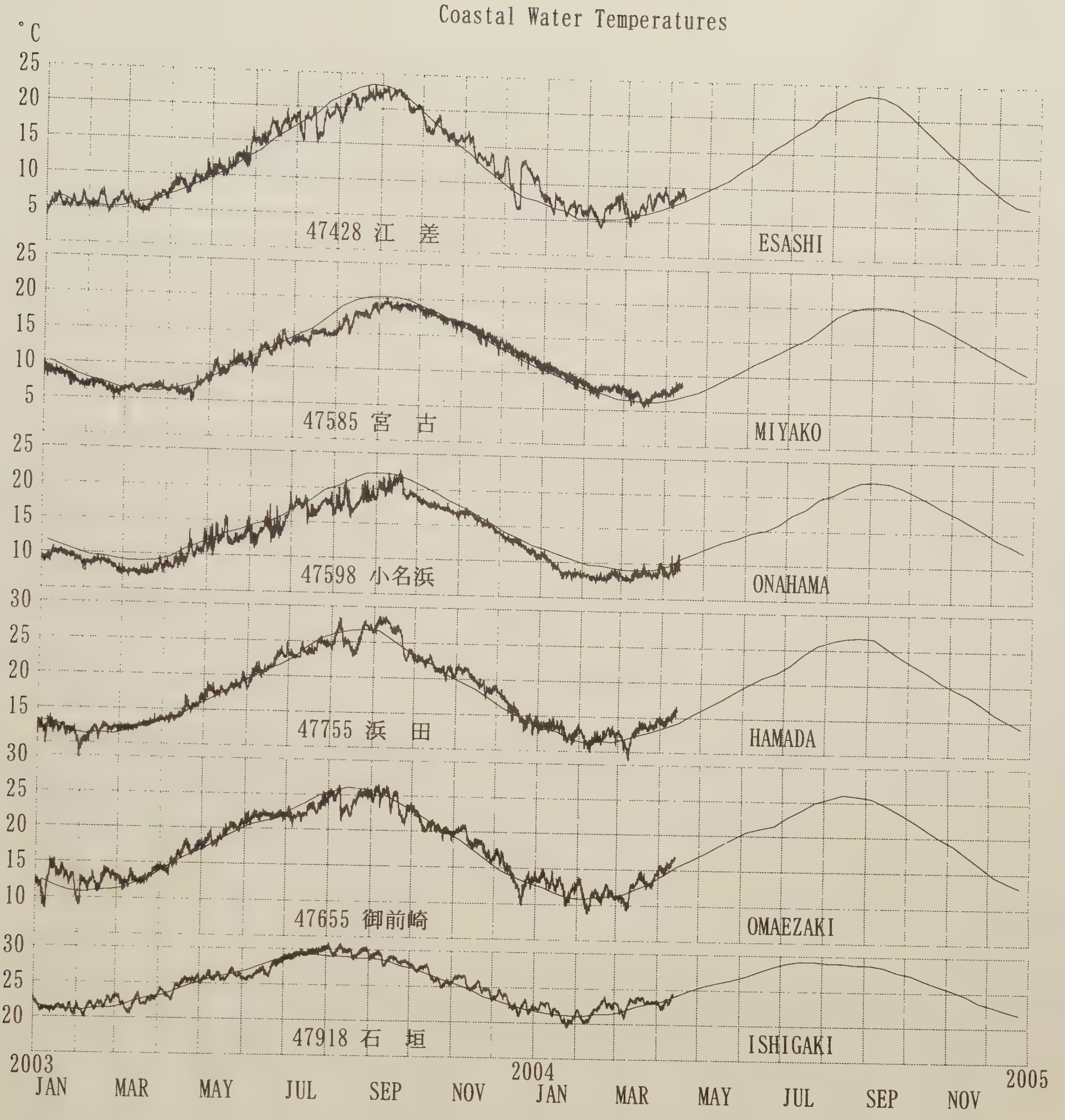
Time Series of Area Mean SST in the Western North Pacific



第13図　海域別旬平均海面水温平年偏差時系列図（つづき）

Fig. 13 (continue) Time series of the ten-day mean SST anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1971-2000).

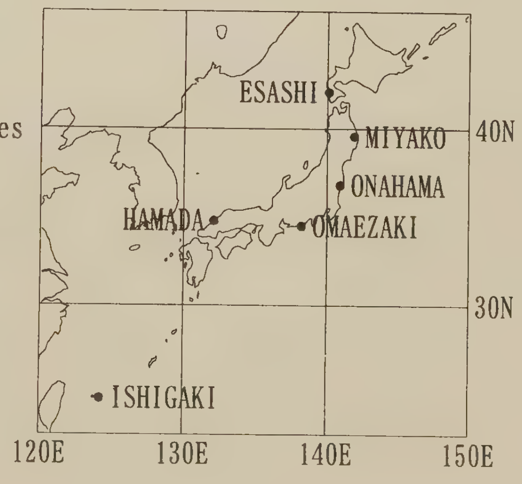


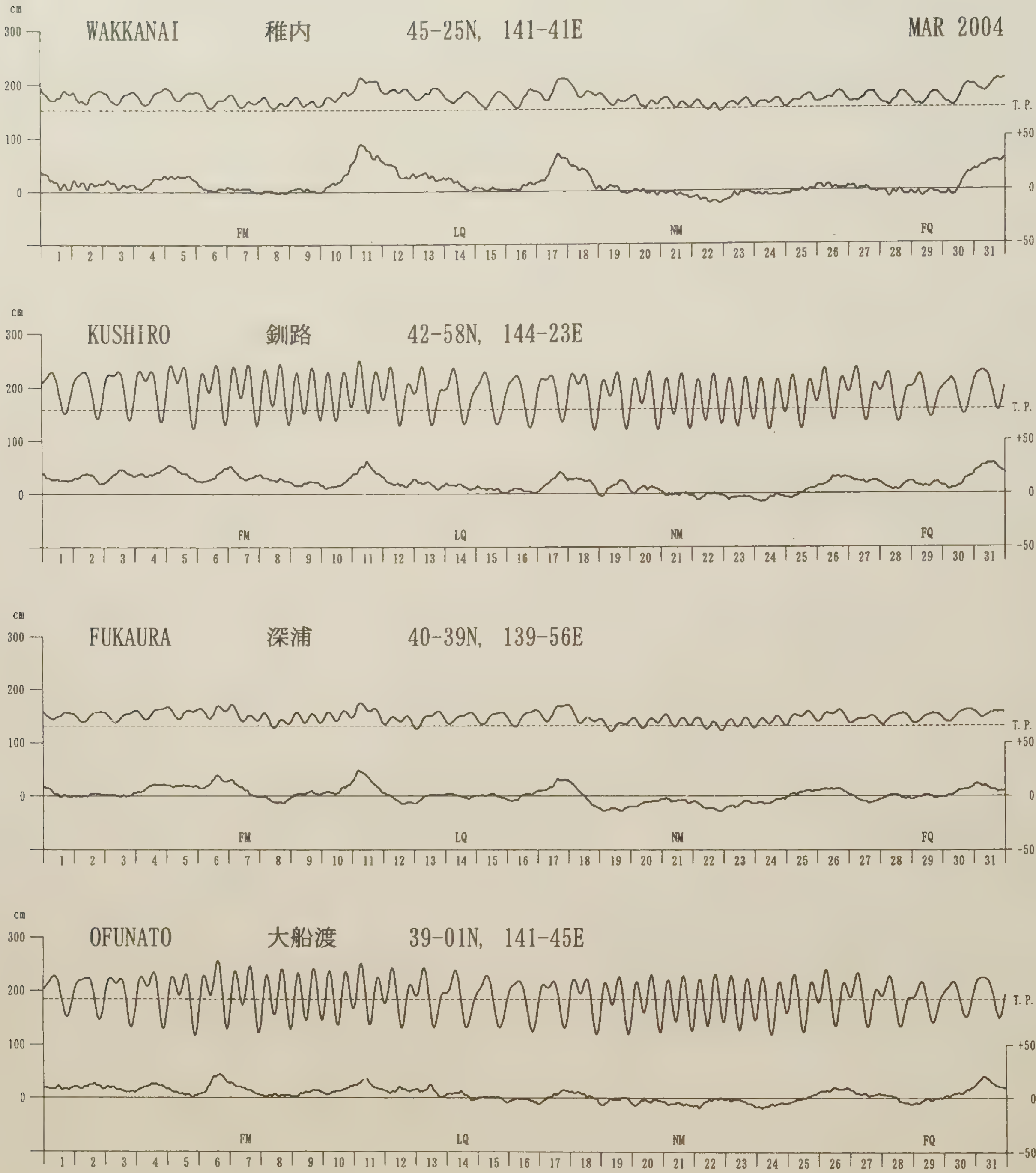


第14図 沿岸水温時系列図

Fig. 14 Time series of hourly coastal water temperatures (°C) measured at 6 coastal stations of the JMA shown in the right panel.

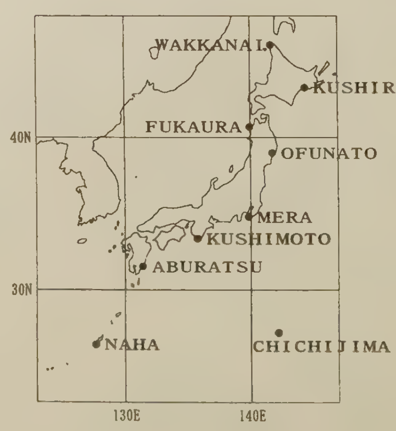
Thin lines show ten-day mean climatology.



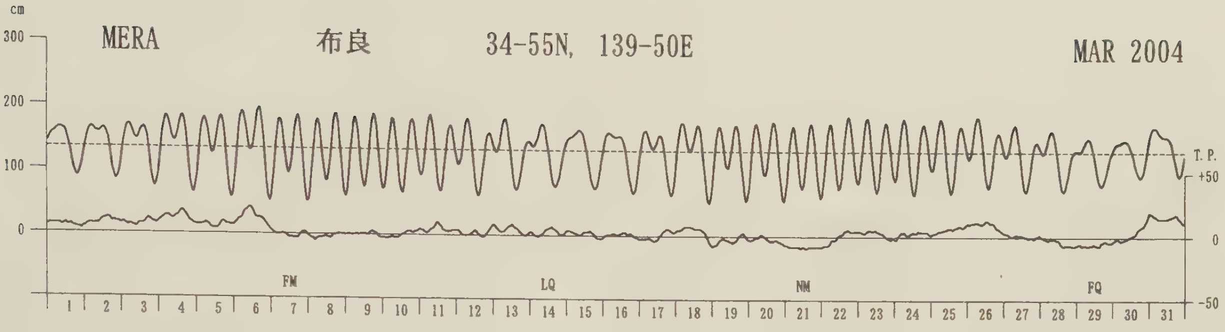


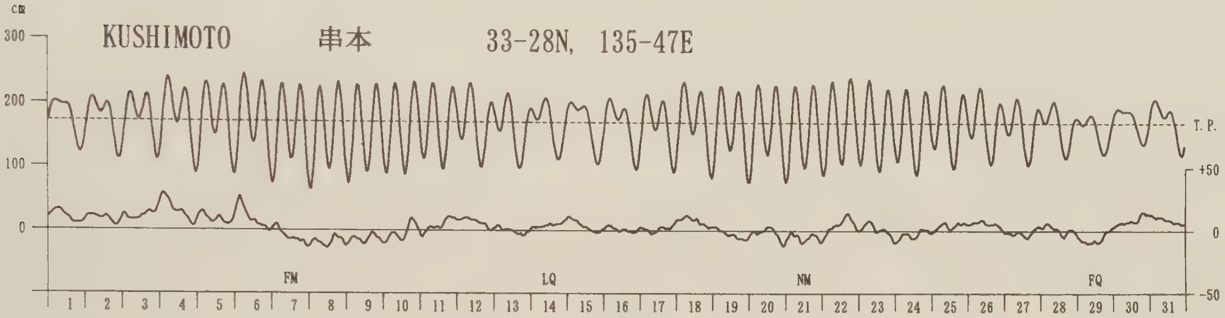
第15図 沿岸潮位時系列図（2004年 3月）

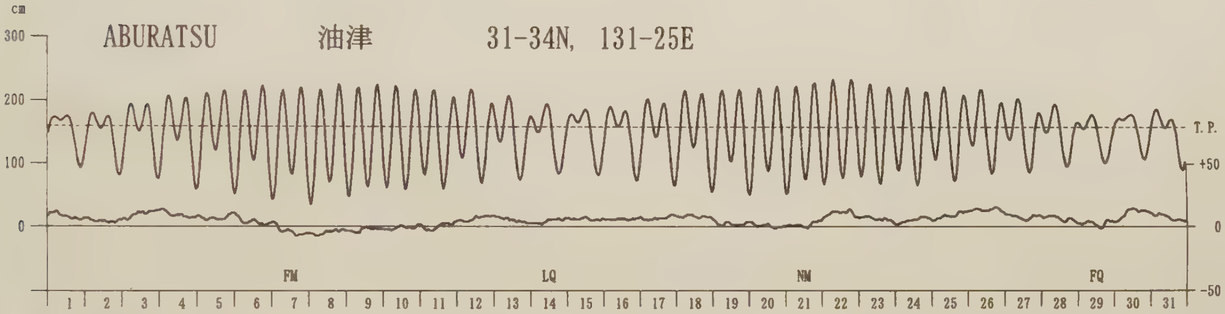
Fig. 15 Time series of hourly sea level observation (upper line) and its anomalies (lower line) at 9 stations of the JMA in the right panel.
Short term variations are removed from raw data.

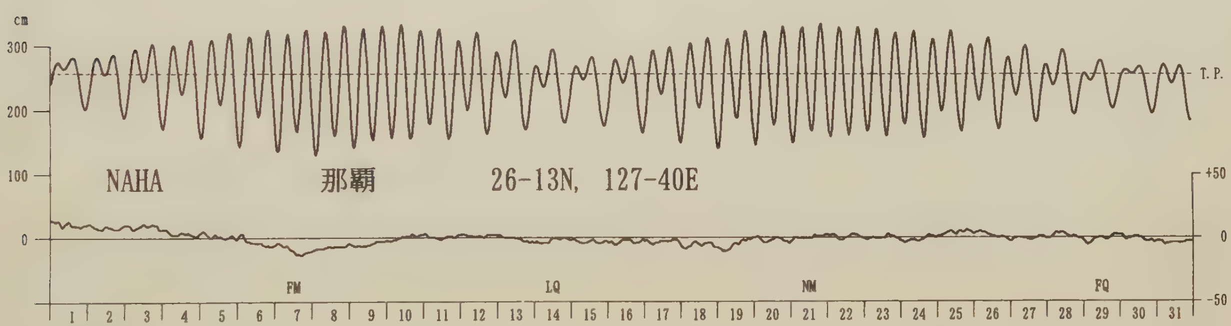


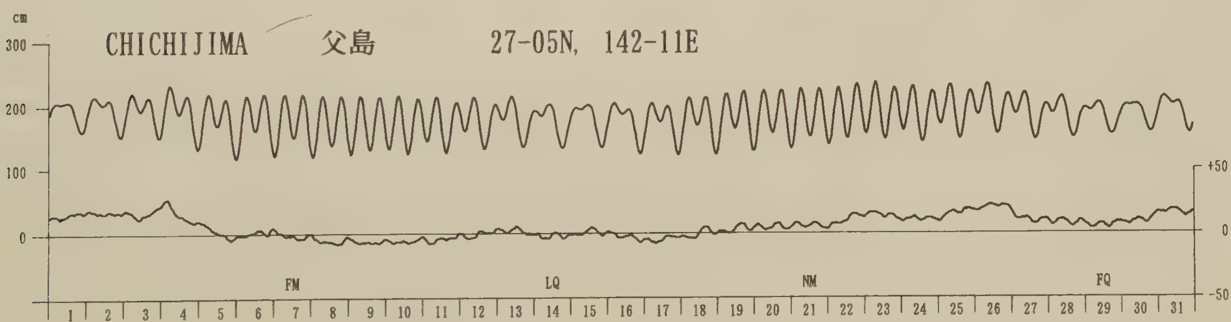
NM: new moon, FQ: first quarter
FM: full moon, LQ: last quarter
T. P. : Mean sea level of Tokyo Bay (Tokyo Peil)





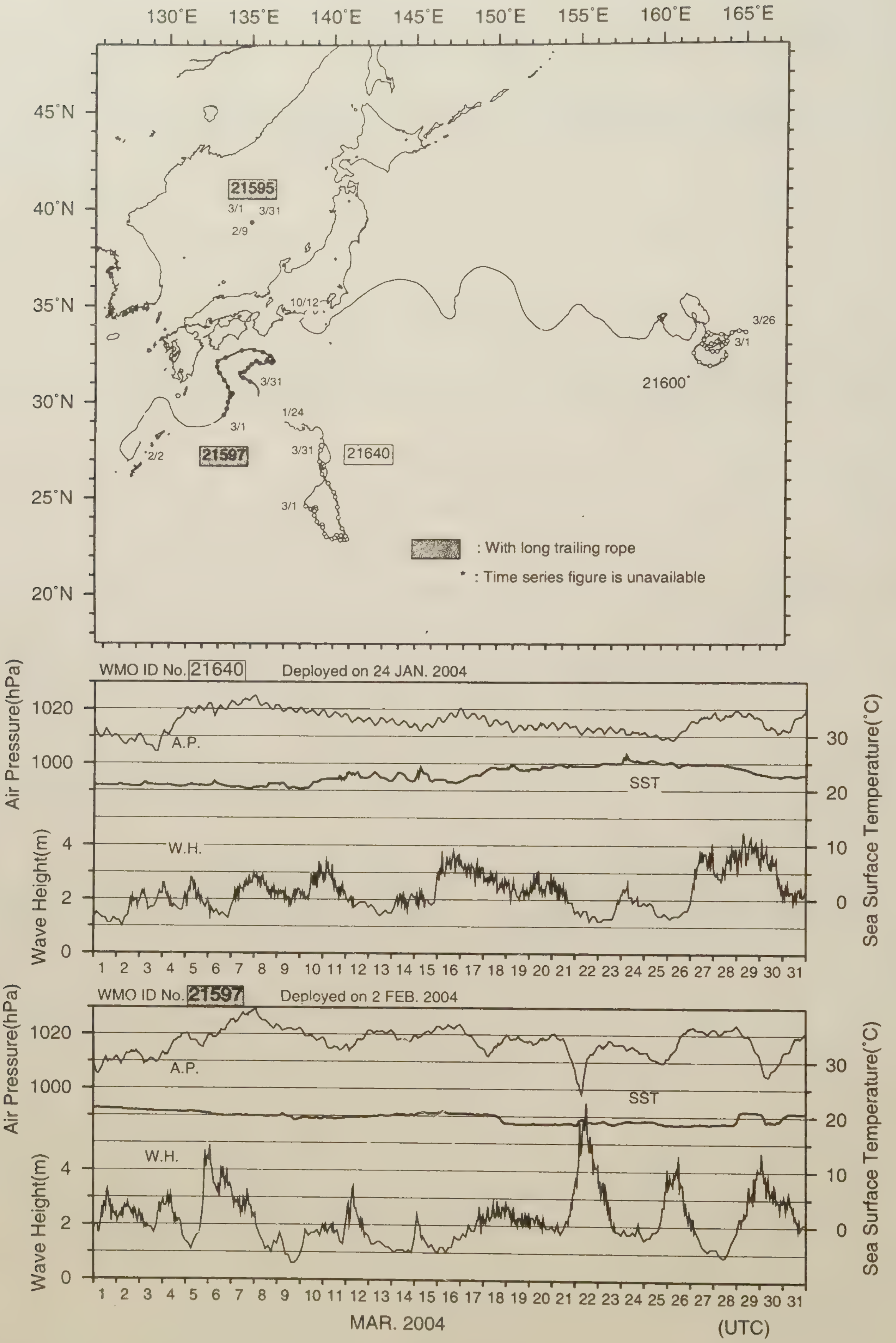






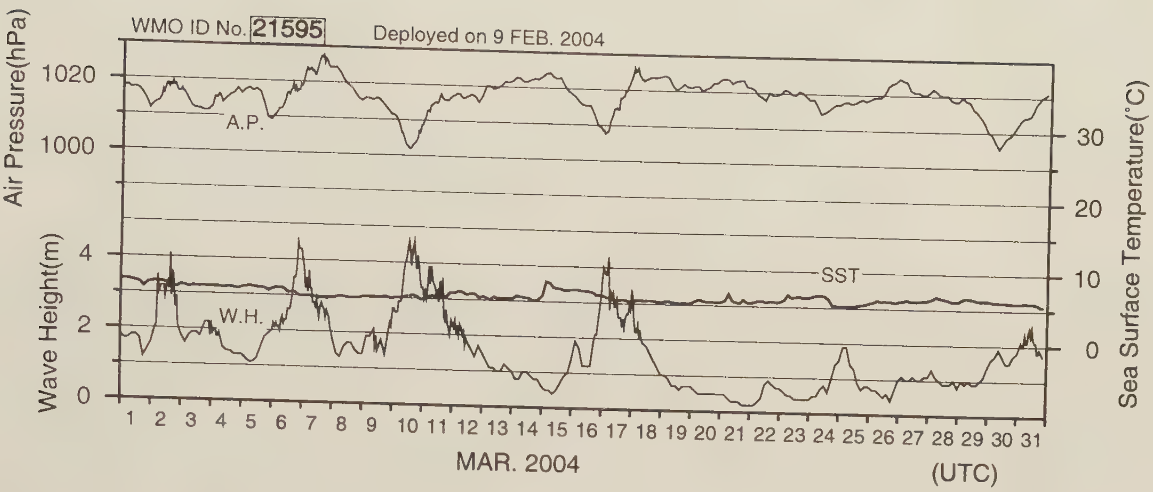
第15図 つづき

Fig. 15 continue

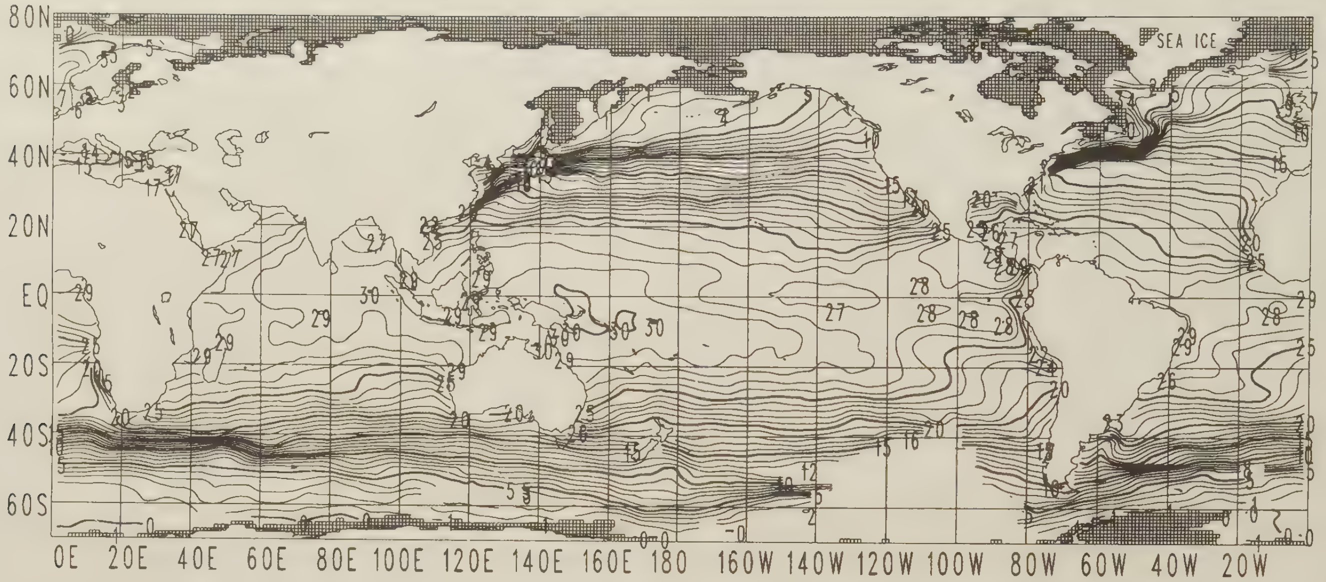


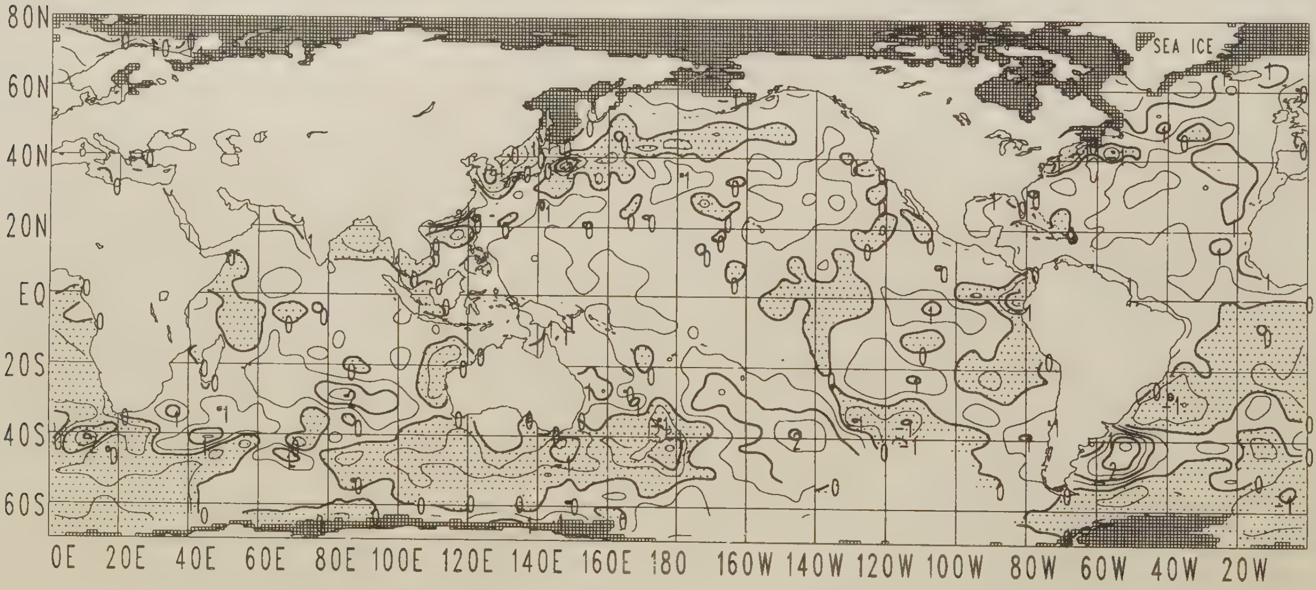
第16図　漂流型海洋気象ブイロボットの軌跡と観測要素の時系列図

Fig.16　Time series of JMA drifting buoy observation.
The upper panel shows paths of the buoys. Circles denote the position at 00h UTC everyday.
The lower panel shows time series of observation data.



第16図 つづき
Fig.16 continue

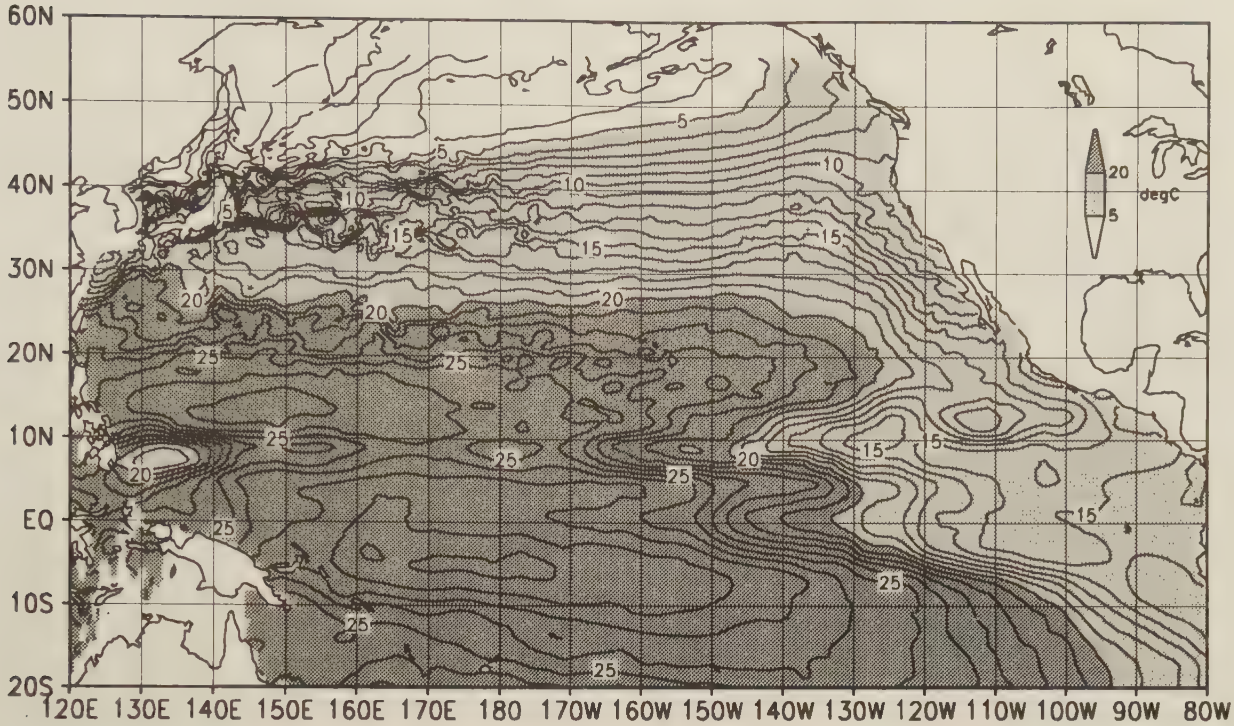




第17図　全球月平均海面水温図（上）及び偏差図（下）（2004年 3月）

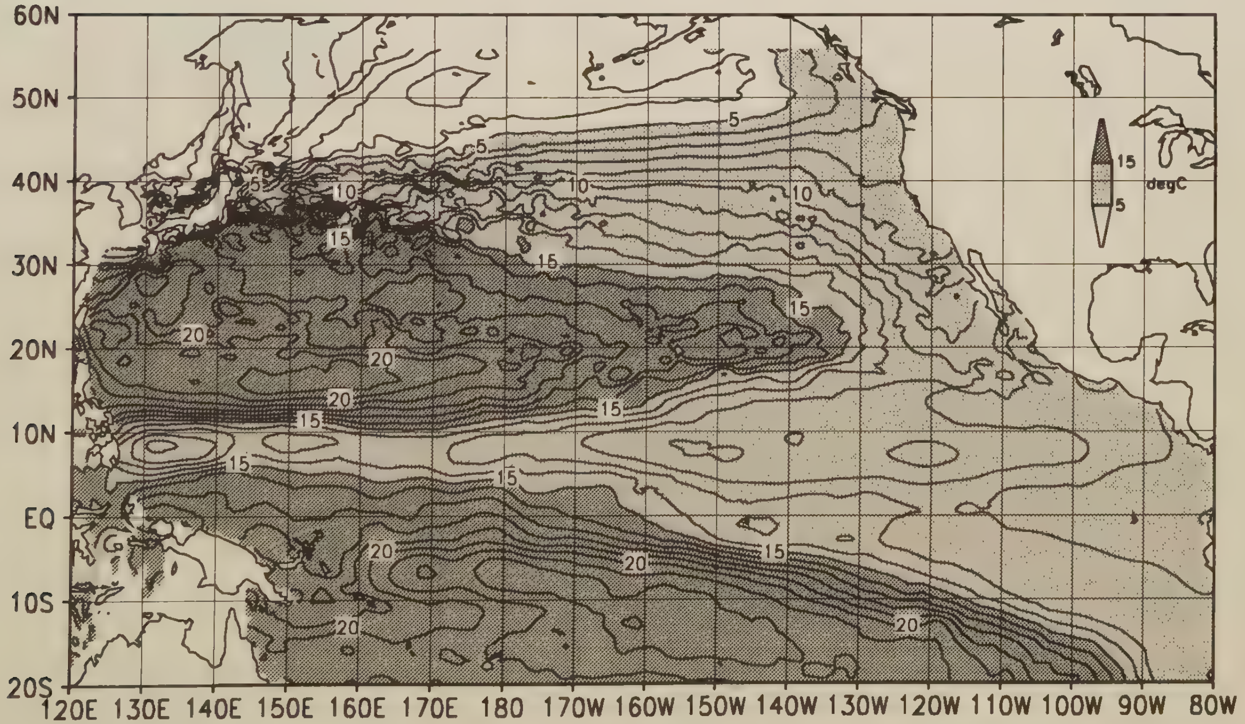
Fig. 17 Monthly mean SST over the global ocean (top) and anomalies (bottom) for March 2004. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C (top) and additional anomaly contours of ±0.5°C are shown by thin lines. Negative anomalies are spotted. Maximum coverage of sea ice is shaded. Data sources for sea ice are U.S. National Ice Center (polar regions) and JMA (the Sea of Okhotsk).

100m / 200m Temperature in the Pacific Ocean



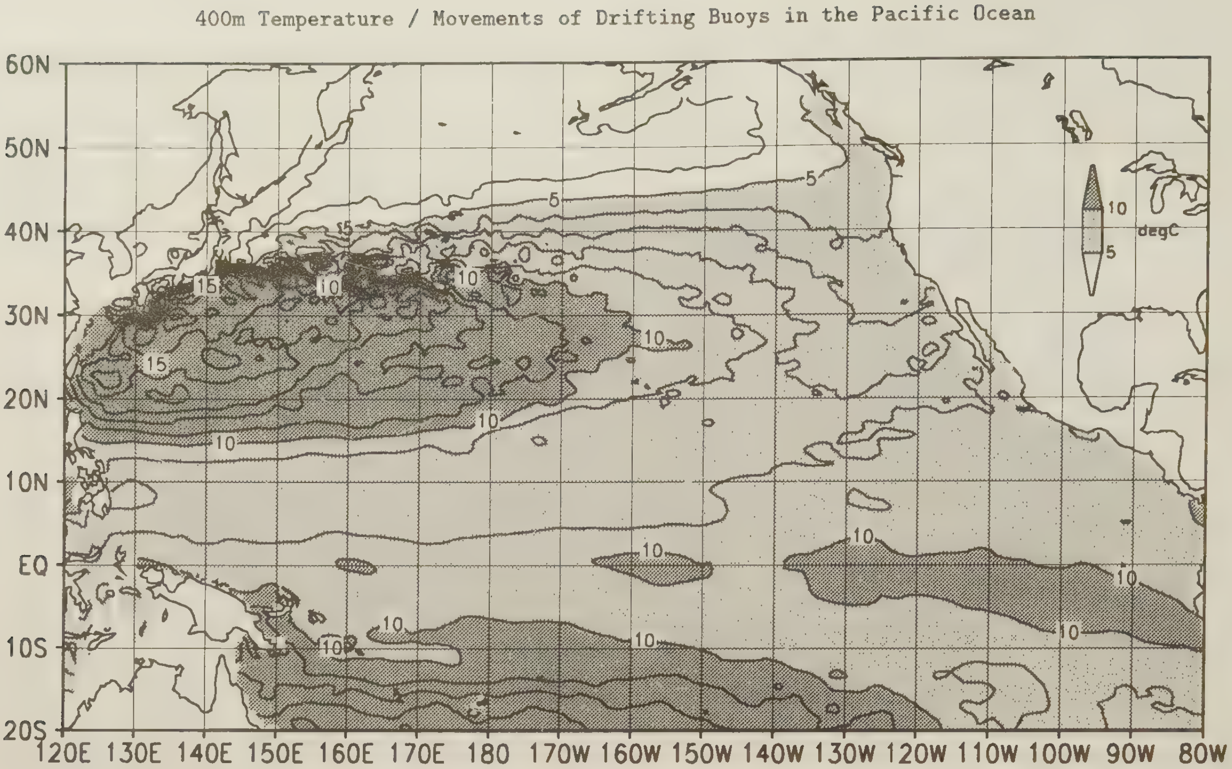
第 18 図　太平洋月平均表層水温図（深さ 100 m）　(2004 年 3 月)
（海洋総合解析システムによる）

Fig. 18　Monthly mean subsurface (100 m) temperature in the Pacific Ocean for March 2004. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)



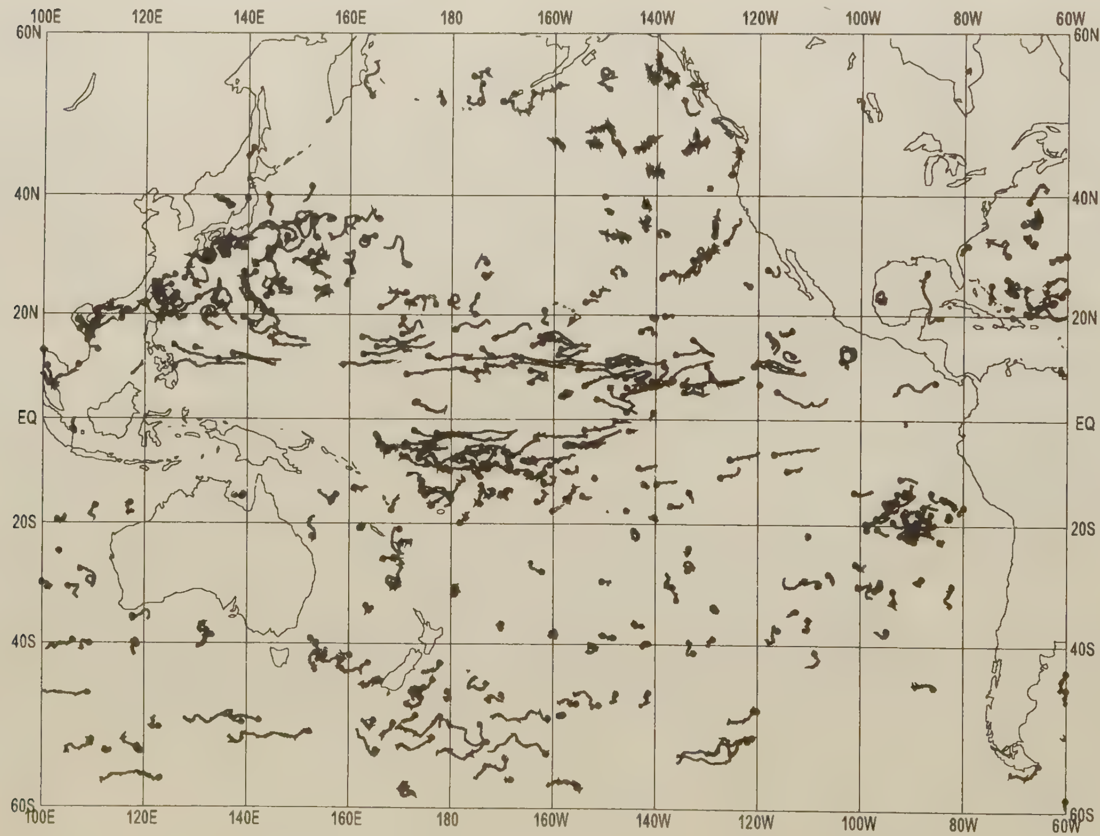
第 19 図　太平洋月平均表層水温図（深さ 200 m）　(2004 年 3 月)
（海洋総合解析システムによる）

Fig. 19　Monthly mean subsurface (200 m) temperature in the Pacific Ocean for March 2004. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)



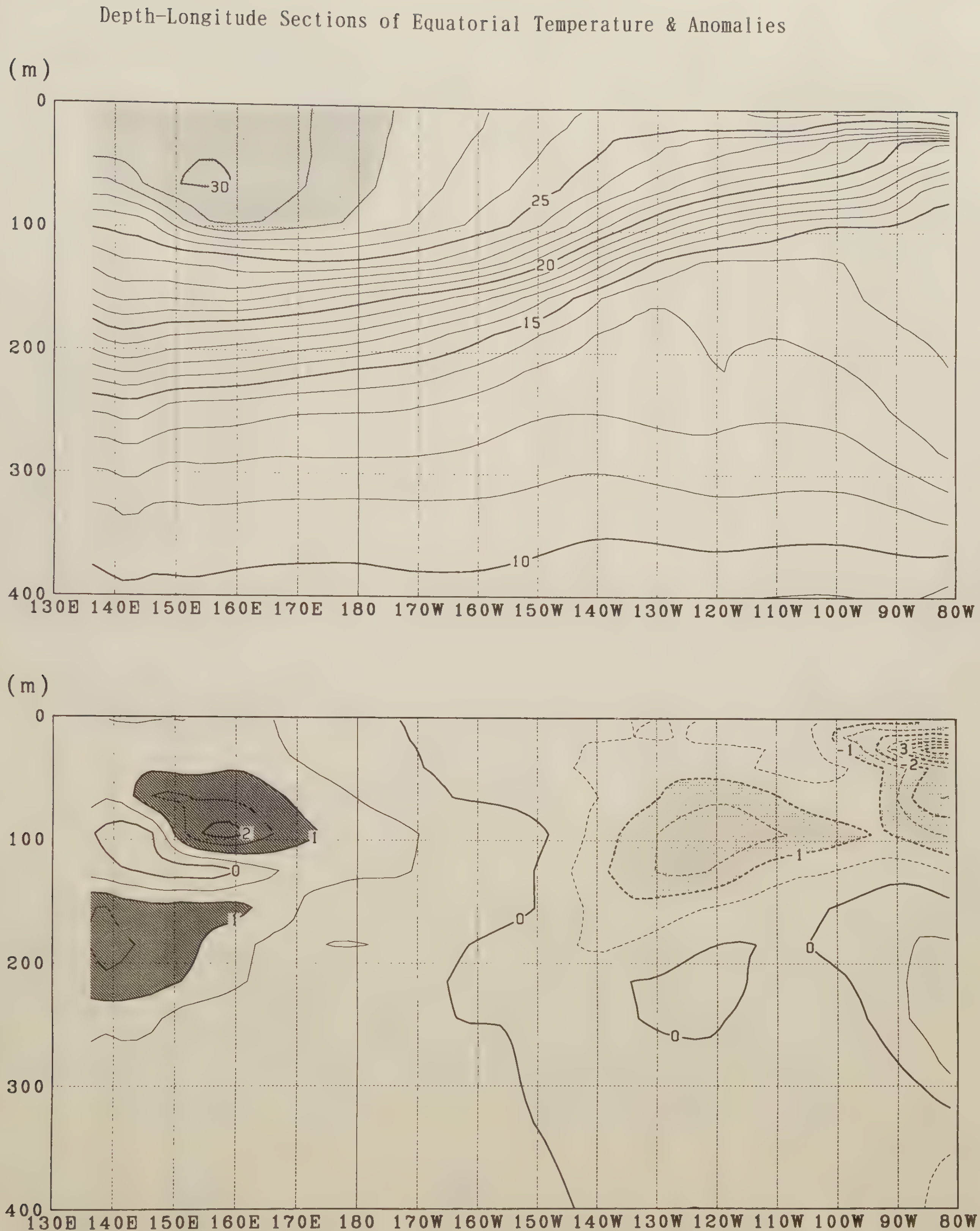
第 20 図　太平洋月平均表層水温図（深さ 400 m）　(2004 年 3 月)
（海洋総合解析システムによる）

Fig. 20　Monthly mean subsurface (400 m) temperature in the Pacific Ocean for March 2004. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)



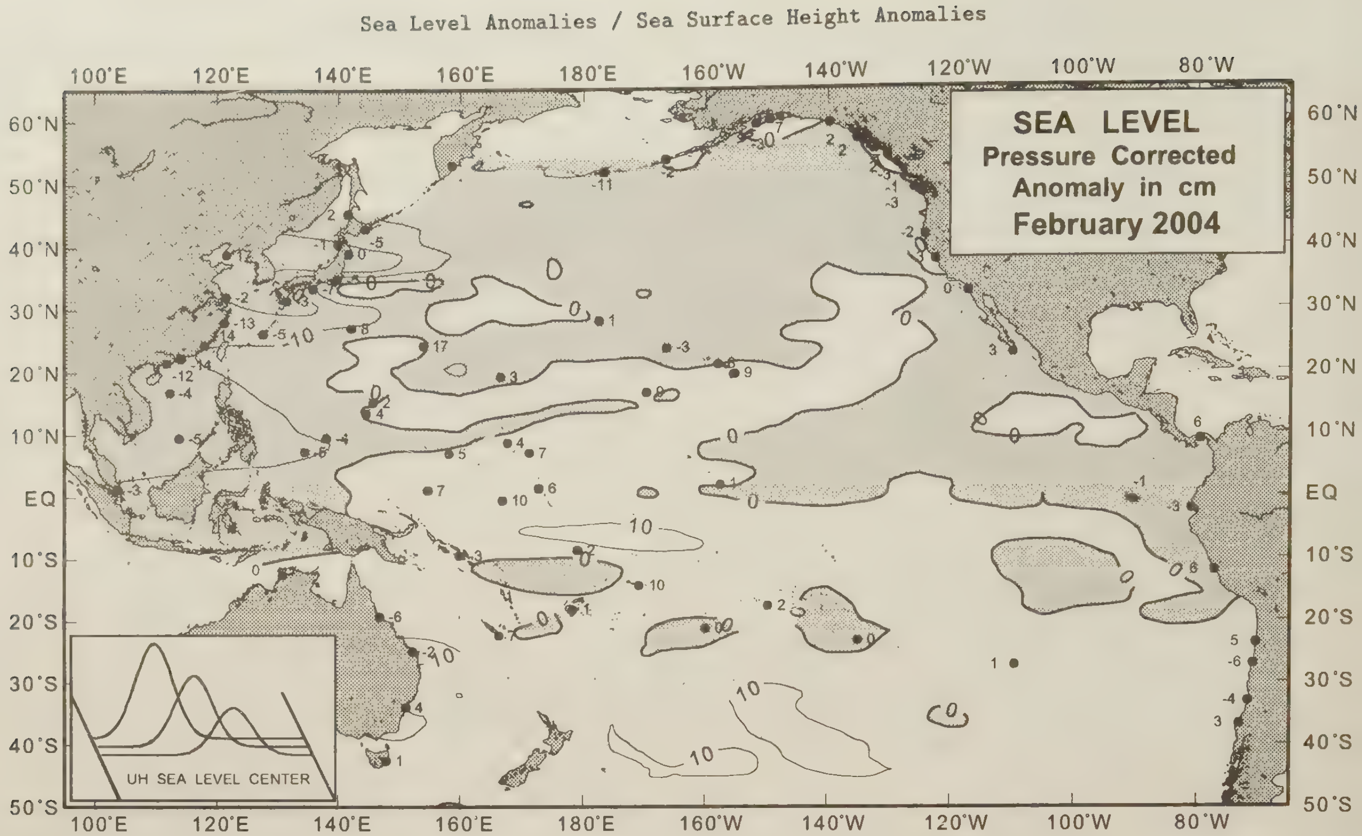
第 21 図　太平洋ブイ流跡図（2004 年 3 月）

Fig. 21　Trajectories of drifting buoys in the Pacific Ocean during March 2004. Each track is for one buoy. Small circles represent the last positions for the month.



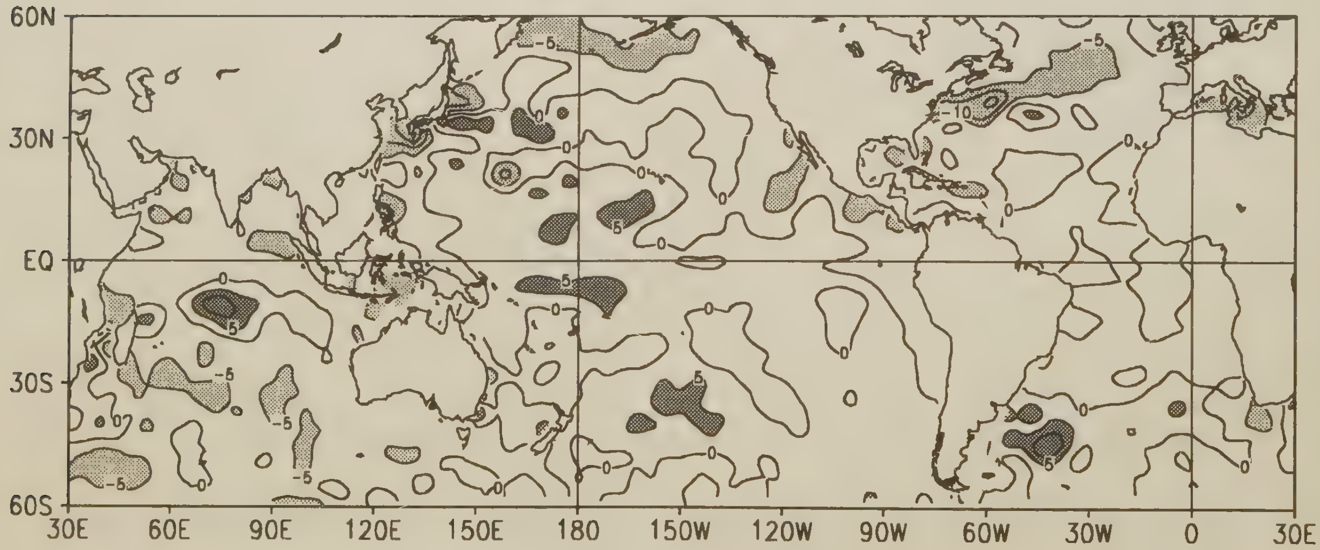
第22図　太平洋赤道に沿う表層水温（上）及び偏差（下）の深度－経度断面図（2004年 3月）

Fig. 22 Depth-longitude sections of temperature (top) and anomalies (bottom) along the equator in the Pacific Ocean for March 2004. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (top) and 0.5°C (bottom). Values greater than 28°C in the top panel are shaded. In the bottom panel, values greater than 1°C are shaded and values less than -1°C are spotted. Anomalies are computed from 1987-2003 base period means.



第 23 図　太平洋月平均海面水位偏差図 (2004 年 2 月)

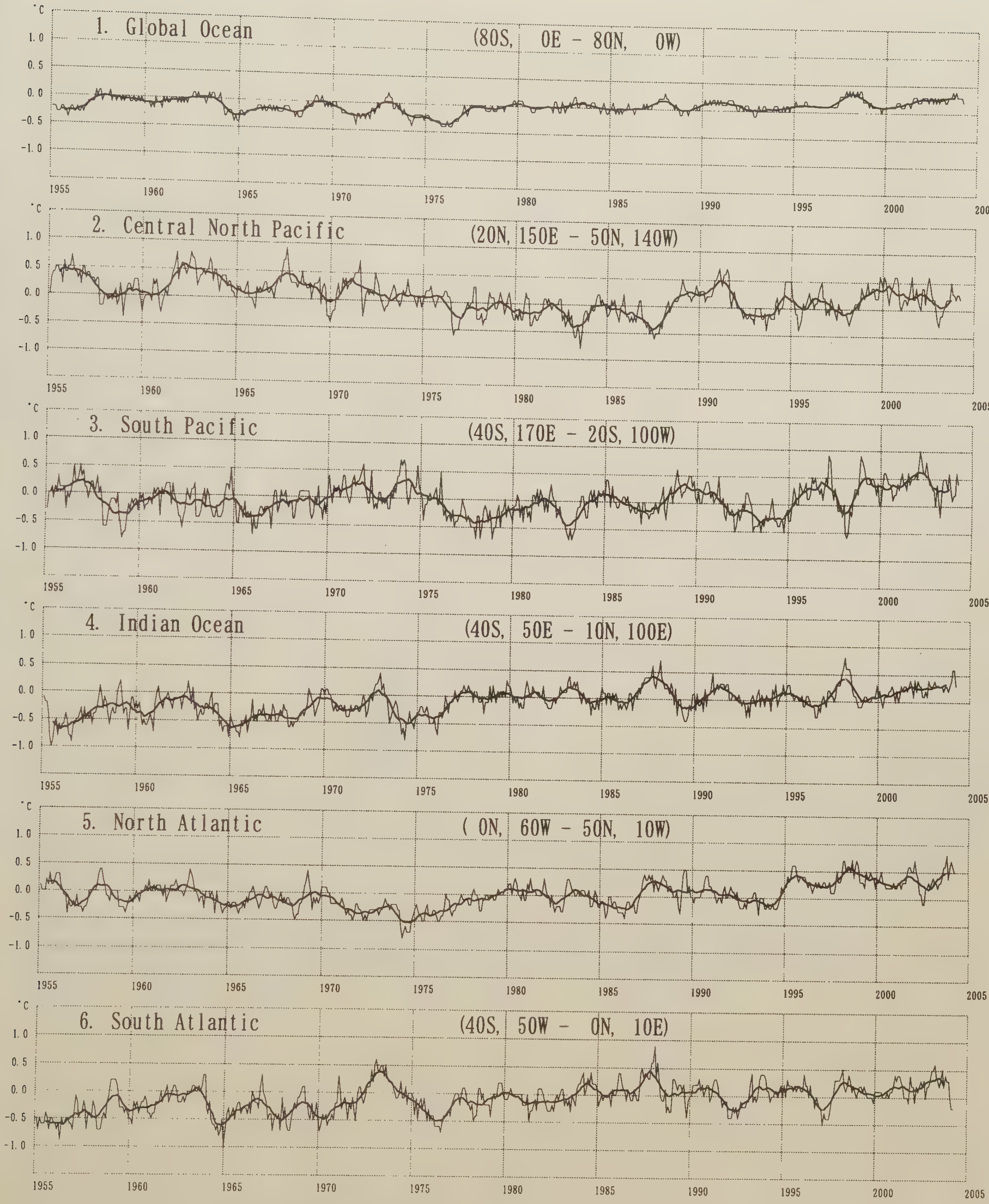
Fig. 23　Monthly sea level anomalies for February 2004 obtained from mean sea level (1993-2001) adjusted for atmospheric pressure. This figure is prepared by the SOC of ISLP-PAC, Department of Oceanography, University of Hawaii.



第 24 図　全球月平均海面高度偏差図 (2004 年 2 月)

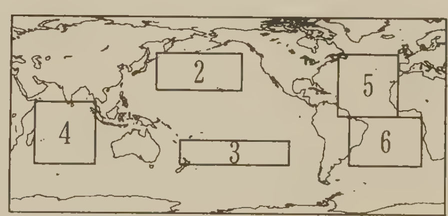
Fig. 24　Monthly sea surface height anomalies in the global ocean derived from the altimeter data of Jason-1 for February 2004. Contour interval is 5 cm. Positive anomalies exceeding +5 cm are shaded and negative anomalies exceeding -5 cm are spotted. Anomalies are computed from 1993-1998 base period means.

Long-term Variation of Monthly Mean SST Anomalies

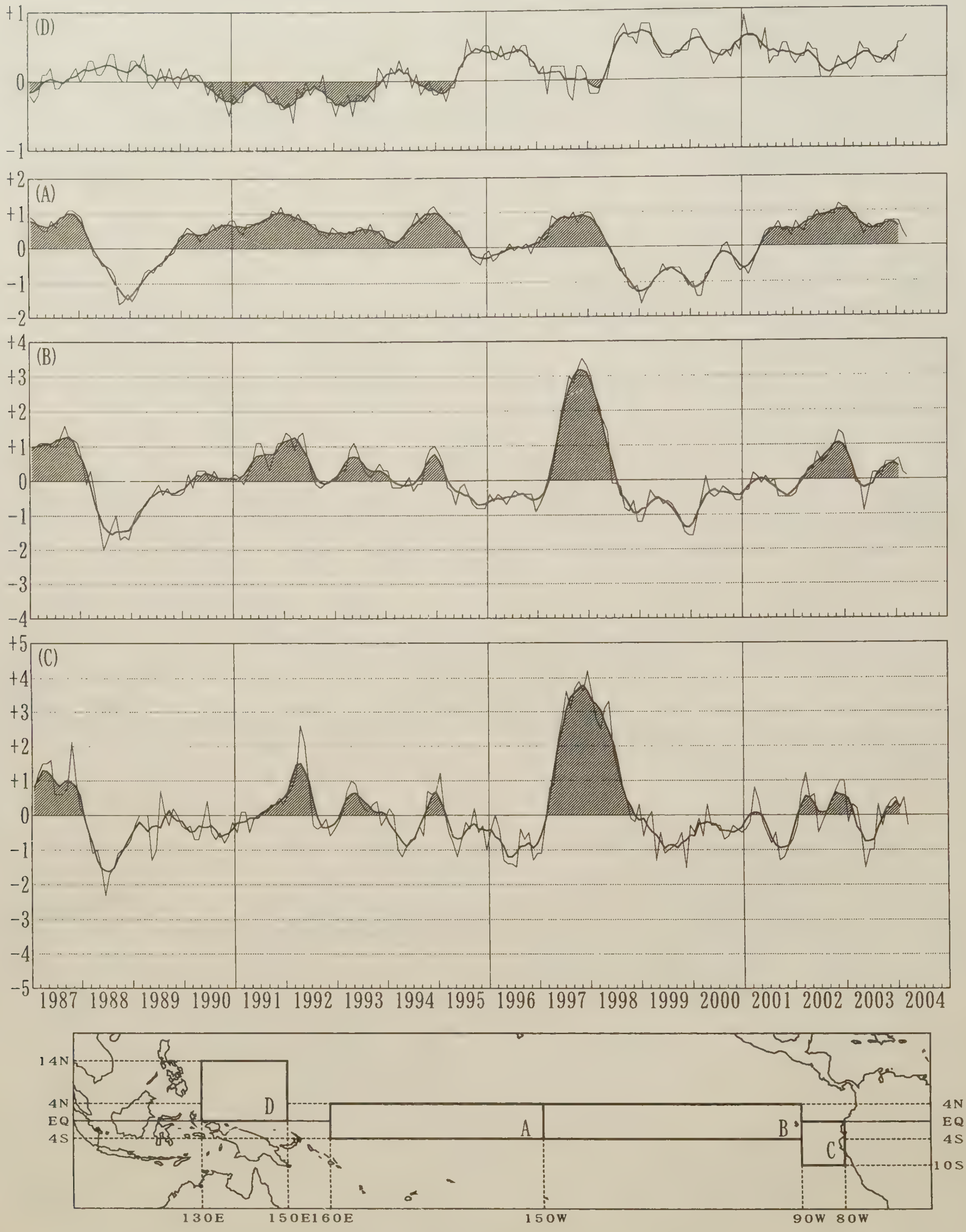


第25図 海域平均海面水温偏差の長期変動

Fig. 25 Long-term variations of monthly mean sea surface temperature anomalies (°C) for the areas shown in the right panel. Anomalies are computed from the JMA climatology (1971-2000). Thin lines show the monthly mean and thick lines their 13-month running means.



Time Series of Tropical Pacific SST Anomalies



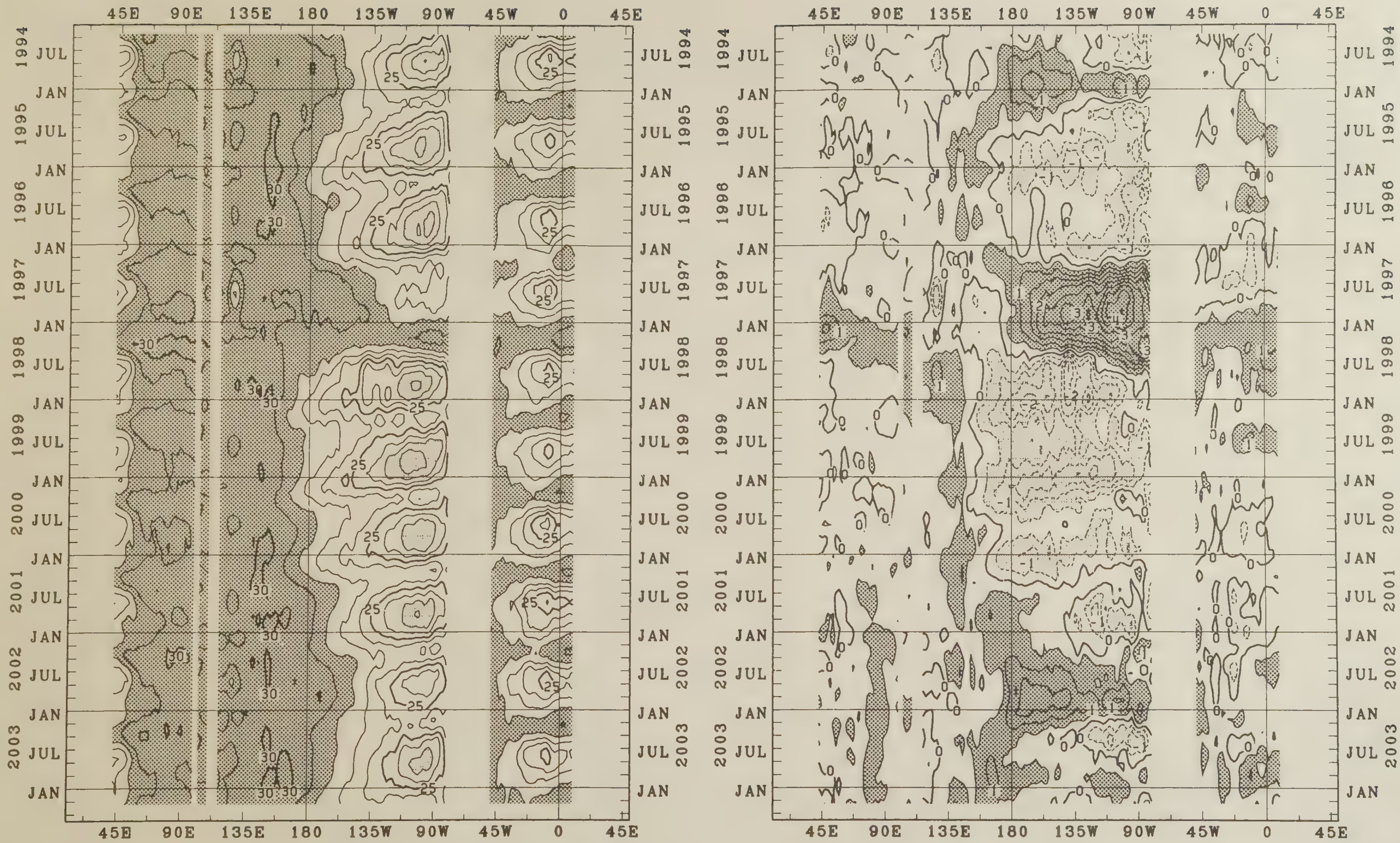
第26図　太平洋熱帯域の海面水温偏差時系列図

Fig. 26 Time series of monthly mean SST anomalies (°C) in the tropical Pacific Ocean for the areas indicated at the bottom panel.
Thin lines show the monthly means and thick lines their 5-month running means.　Positive anomalies (A, B, C) and negative anomalies (D) are shaded.　Anomalies are computed from the JMA climatology (1971-2000).

MONTH YEAR	SEA SURFACE TEMPERATURE AND ANOMALY (°C)								SOI	SEA LEVEL PRESSURE ANOMALY (hPa)	
	REGION D 14N-EQ 130E-150E		REGION A 4N-4S 160E-150W		REGION B 4N-4S 150W-90W		REGION C EQ-10S 90W-80W		SOI	TAHITI 17-33S 149-37W	DARWIN 12-24S 130-52E
JAN 02	28.7	0.2	28.7	0.7	25.0	-0.4	24.2	-0.3	0.3	1.3	0.7
FEB 02	28.6	0.3	28.5	0.5	26.3	0.0	26.7	0.7	0.7	1.5	-0.2
MAR 02	28.8	0.3	28.5	0.4	27.2	0.1	27.5	1.2	-0.2	0.4	1.0
APR 02	29.3	0.5	29.0	0.8	27.5	0.3	25.9	0.5	-0.1	0.1	0.3
MAY 02	29.7	0.4	29.4	0.8	27.2	0.3	24.9	0.6	-1.3	-1.1	0.7
JUN 02	29.8	0.4	29.5	1.0	27.0	0.8	22.4	-0.5	-0.4	-0.2	0.4
JUL 02	29.3	0.0	29.3	0.8	25.9	0.5	21.7	-0.2	-0.7	0.5	1.6
AUG 02	29.2	0.0	29.3	0.9	25.3	0.6	21.0	0.1	-1.2	-1.4	0.5
SEP 02	29.3	0.0	29.3	0.9	25.5	0.8	20.9	0.4	-0.5	-0.3	0.8
OCT 02	29.5	0.1	29.3	0.9	25.7	1.0	21.6	0.7	-0.5	-1.0	-0.3
NOV 02	29.6	0.3	29.6	1.2	26.1	1.4	22.8	1.0	-0.4	0.1	1.0
DEC 02	29.2	0.2	29.3	1.1	26.3	1.3	23.9	1.0	-1.0	-0.1	1.7
JAN 03	28.7	0.2	29.1	1.1	26.2	0.8	24.3	-0.2	-0.1	-0.1	0.2
FEB 03	28.4	0.1	28.9	0.9	26.8	0.5	26.3	0.3	-0.5	-1.5	-0.2
MAR 03	28.7	0.2	29.0	0.9	27.0	-0.1	26.5	0.2	-0.3	-0.2	0.5
APR 03	29.3	0.5	28.8	0.6	27.1	-0.1	24.9	-0.5	-0.1	0.5	0.8
MAY 03	29.7	0.4	28.9	0.3	26.0	-0.9	22.8	-1.5	-0.6	-0.7	0.2
JUN 03	29.8	0.4	29.1	0.6	25.9	-0.3	21.9	-1.0	-0.9	-0.9	0.4
JUL 03	29.6	0.3	29.0	0.5	25.6	0.2	20.9	-1.0	0.2	0.7	0.3
AUG 03	29.4	0.2	28.9	0.5	24.9	0.2	21.2	0.3	0.0	-0.2	-0.1
SEP 03	29.5	0.2	28.9	0.5	24.8	0.1	20.2	-0.3	-0.1	-0.3	0.0
OCT 03	29.7	0.3	29.1	0.7	25.2	0.5	21.1	0.2	-0.1	-0.5	-0.4
NOV 03	29.6	0.3	29.1	0.7	25.2	0.5	22.2	0.4	-0.2	0.0	0.4
DEC 03	29.2	0.2	28.9	0.7	25.5	0.5	23.4	0.5	1.1	0.9	-1.1
JAN 04	29.0	0.5	28.7	0.7	26.0	0.6	24.7	0.2	-1.0	-1.5	0.9
FEB 04	28.8	0.5	28.4	0.4	26.5	0.2	26.5	0.5	0.8	1.4	-0.6
MAR 04	29.1	0.6	28.3	0.2	27.2	0.1	26.0	-0.3	0.1	-0.7	-1.3

第1表　太平洋熱帯域の大気及び海洋の監視指数

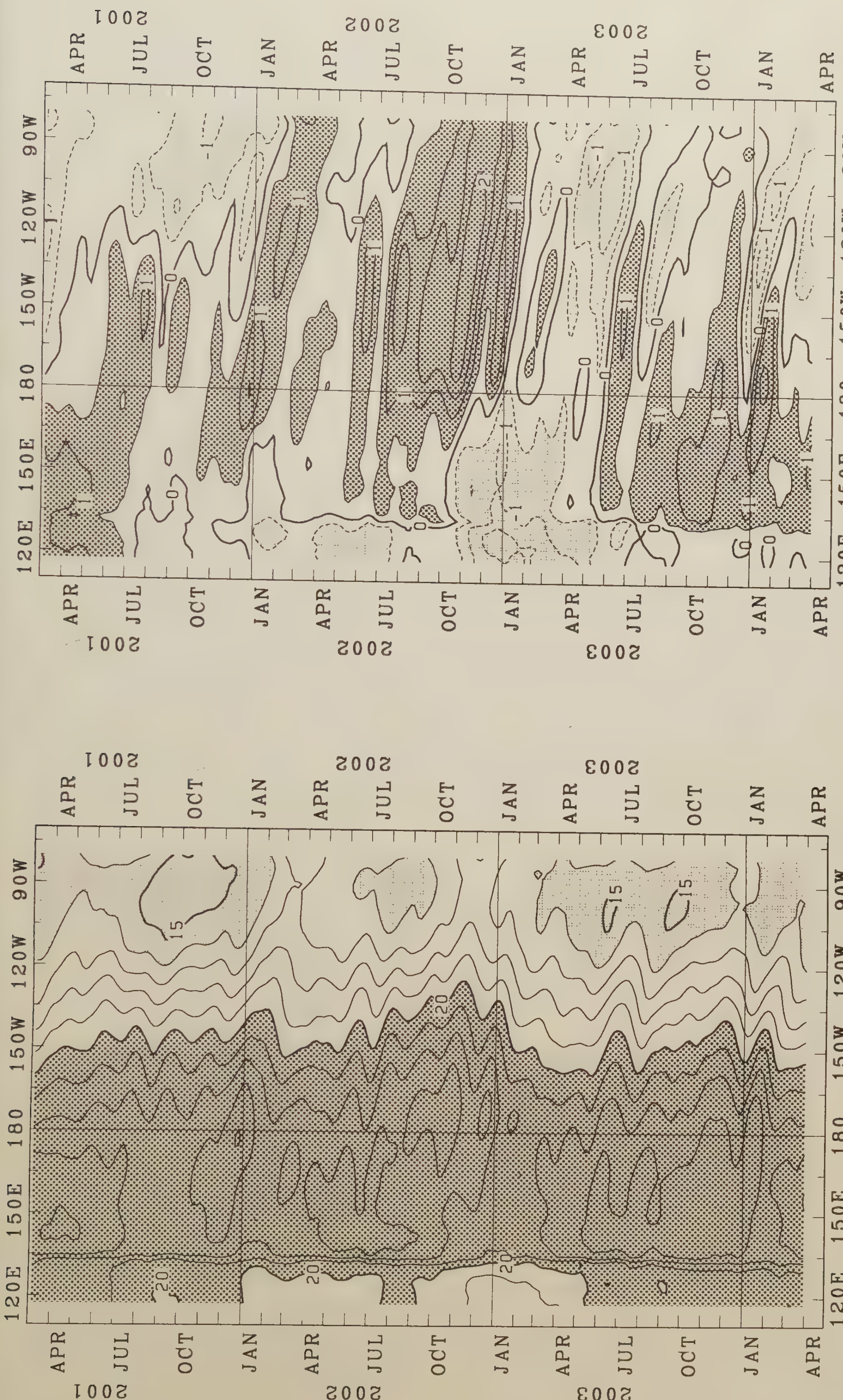
Table 1 Atmospheric and oceanic monitoring indices in the tropical Pacific Ocean



第 27 図　赤道に沿った海面水温（左）および偏差（右）の時間-経度断面図

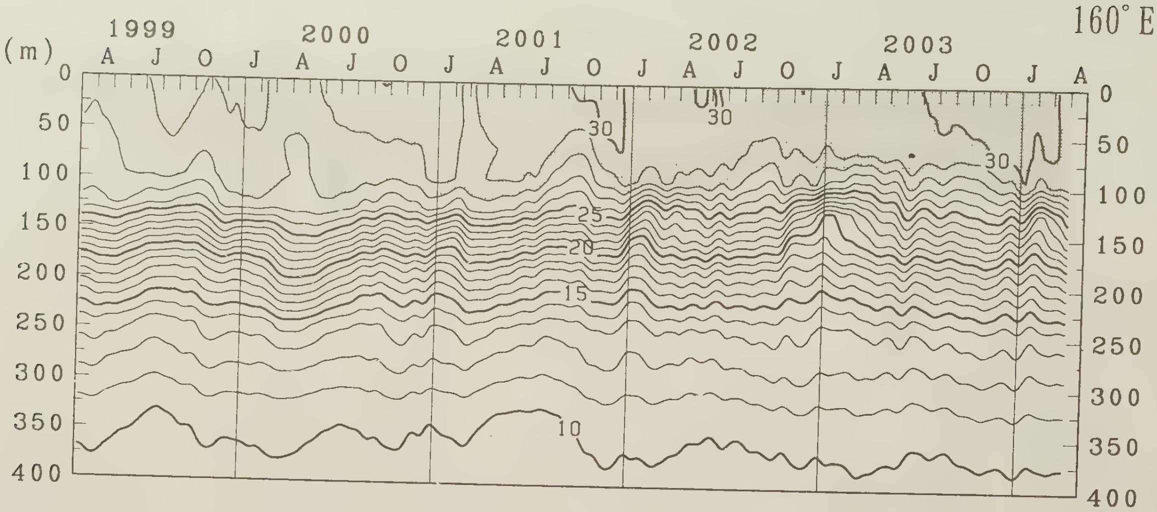
Fig. 27　Time-longitude sections of SSTs (left) and anomalies (right) along the equator (2 °N-2 °S) in the global ocean. Contour interval is 1 °C (left) and 0.5 °C (right). Values greater than 28 °C (+0.5 °C) are shaded and values less than 23 °C (-0.5 °C) are spotted in the left (right) panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1971-2000 base period means.

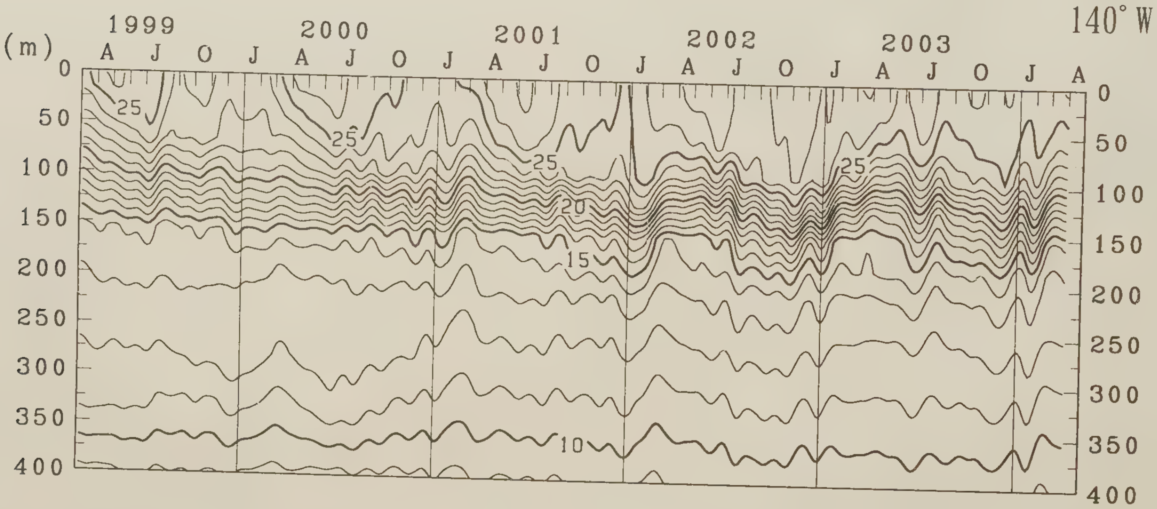
Time-Longitude Sections of Ocean Heat Content & Anomalies (Eq.)

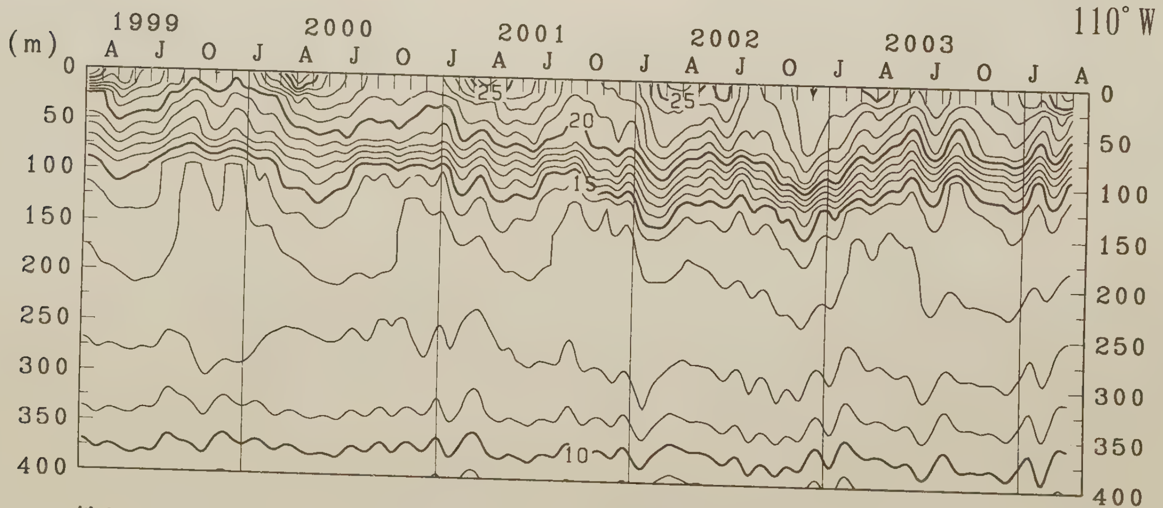


第28図　太平洋の赤道に沿う海洋表層の貯熱量（左）及び偏差（右）の時間－経度断面図

Fig. 28 Time-longitude sections of ocean heat content in the upper 260 m along the equator (left) and anomalies (right) in the Pacific Ocean. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (left) and 0.5°C (right). Values greater than 20°C (+0.5°C) are shaded and values less than 16°C (−0.5°C) are spotted in the left (right) panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1987-2003 base period means.







第29図　太平洋赤道域の表層水温の時間－深度断面図

（上：西部、中：中部、下：東部）

Fig. 29 Time-depth sections of equatorial subsurface temperature for the western Pacific (top, 160°E), the central Pacific (middle, 140°W) and the eastern Pacific (bottom, 110°W). Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C. Values greater than 28°C are shaded.

Sea Ice

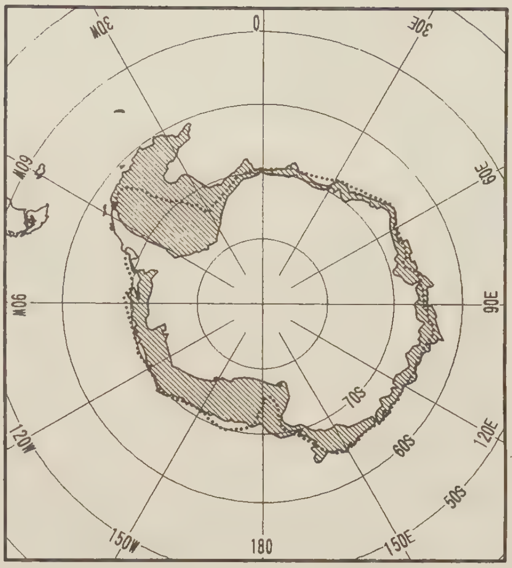


第30-1図　北極域の海氷図（2004年 3月19日）

Fig.30-1 Sea ice chart in the Arctic on 19 Mar. 2004.

The shaded area represents the sea ice extent. The dotted line denotes the mean ice edge averaged for the period from 1972 through 1990.

The data source is the National Ice Center (USA).



第30-2図　南極域の海氷図（2004年 3月19日）

Fig.30-2 Sea ice chart in the Antarctic on 19 Mar. 2004.

The shaded area represents the sea ice extent. The dotted line denotes the mean ice edge averaged for the period from 1973 through 1990.

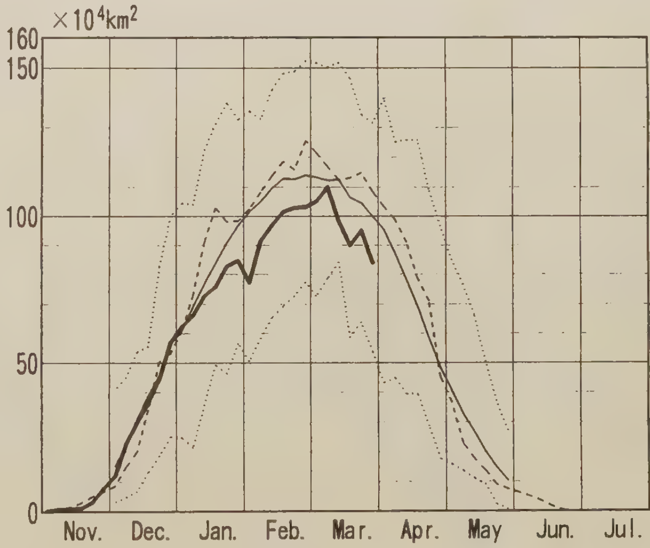
The data source is the National Ice Center (USA).



第30-3図 オホーツク海の海氷図（2004年 3月15日）

Fig.30-3 Sea ice chart in the Sea of Okhotsk on 15 Mar. 2004.

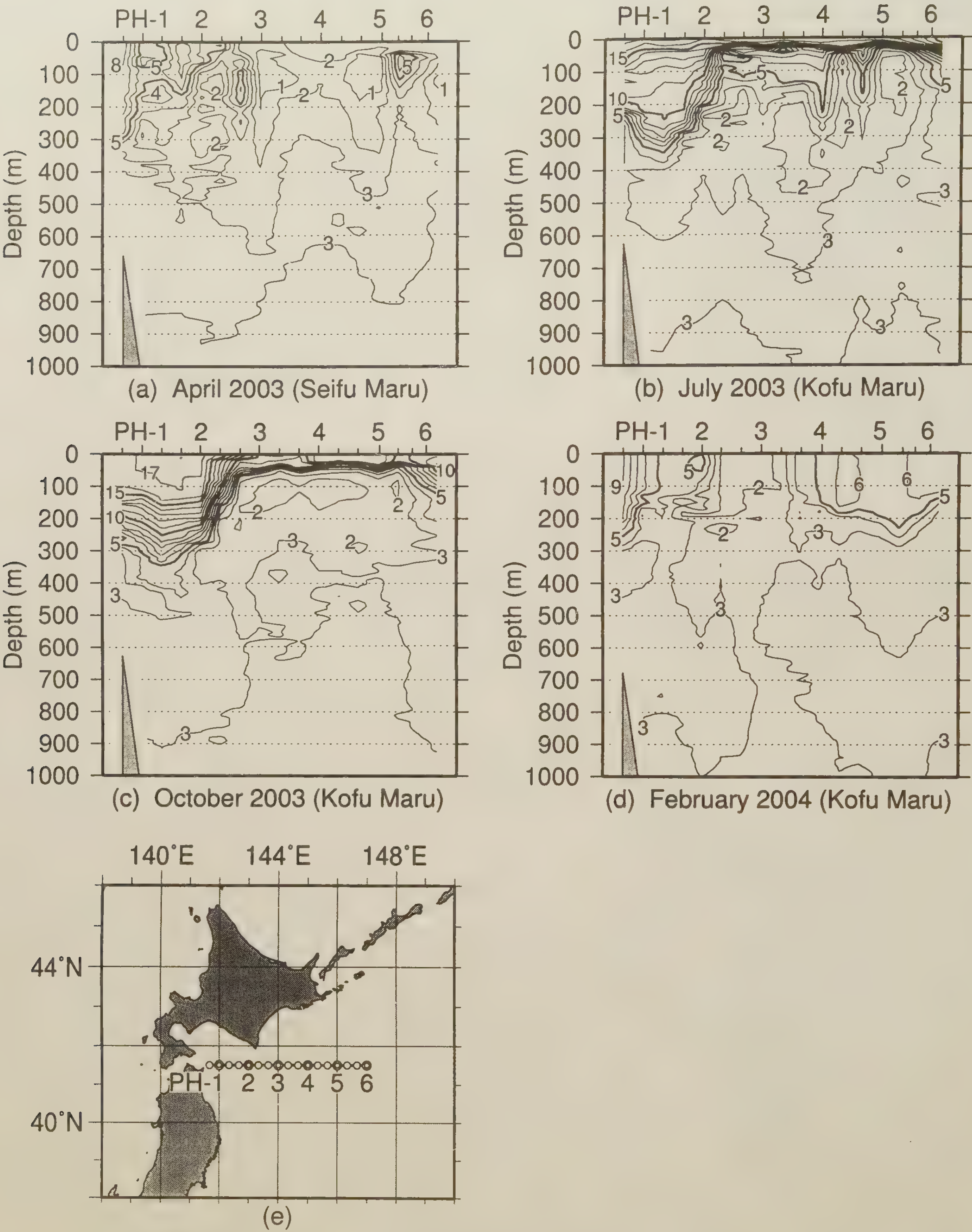
The dotted line denotes the mean ice edge averaged for the period from 1971 through 2000.



第30-4図 オホーツク海の海氷域面積

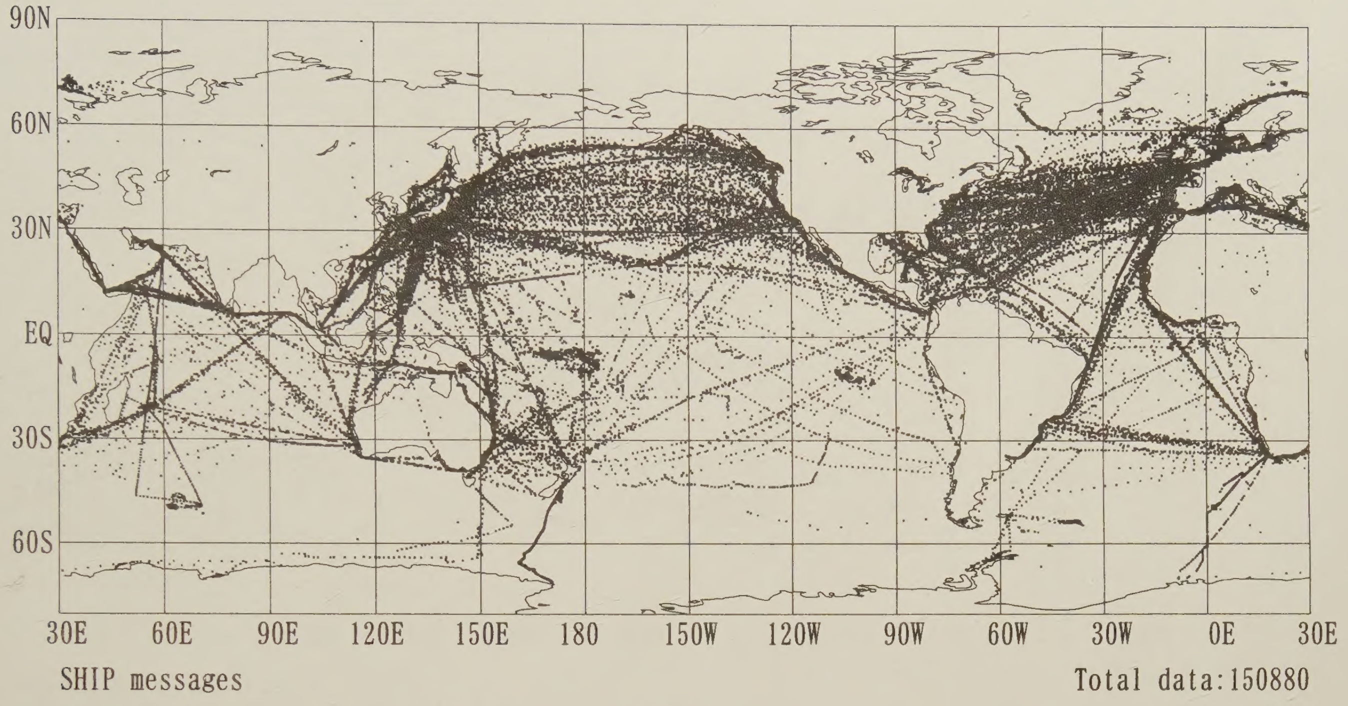
Fig.30-4 Time series of 5-day sea ice area in the Sea of Okhotsk.

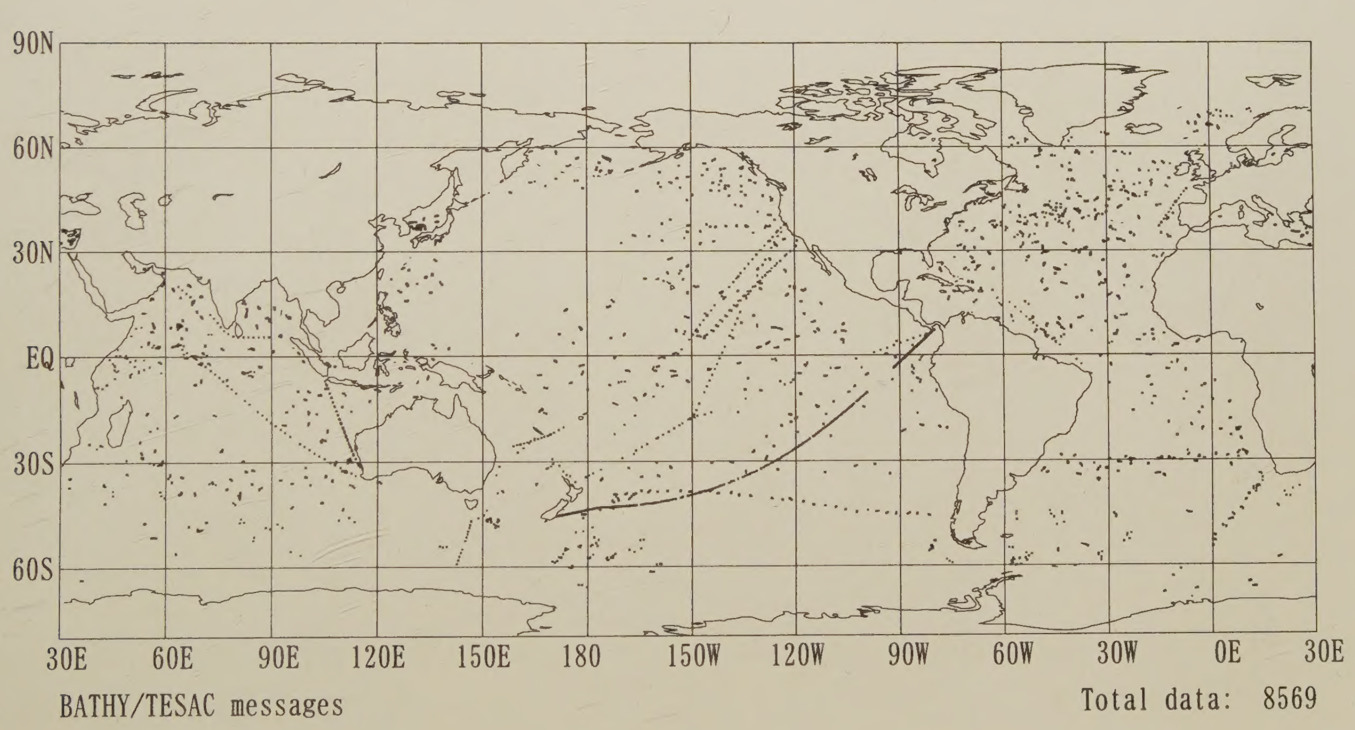
: current season (2003/2004)
: mean extent (1971-2000)
: maximum or minimum extent (1971-2003)
: last season (2002/2003)



第31図 函館海洋気象台高風丸および舞鶴海洋気象台清風丸によるPH線に沿った水温断面図.
(a) 2003年 4月, (b) 2003年 7月, (c) 2003年10月, (d) 2004年 2月, (e) PH 線の位置図.

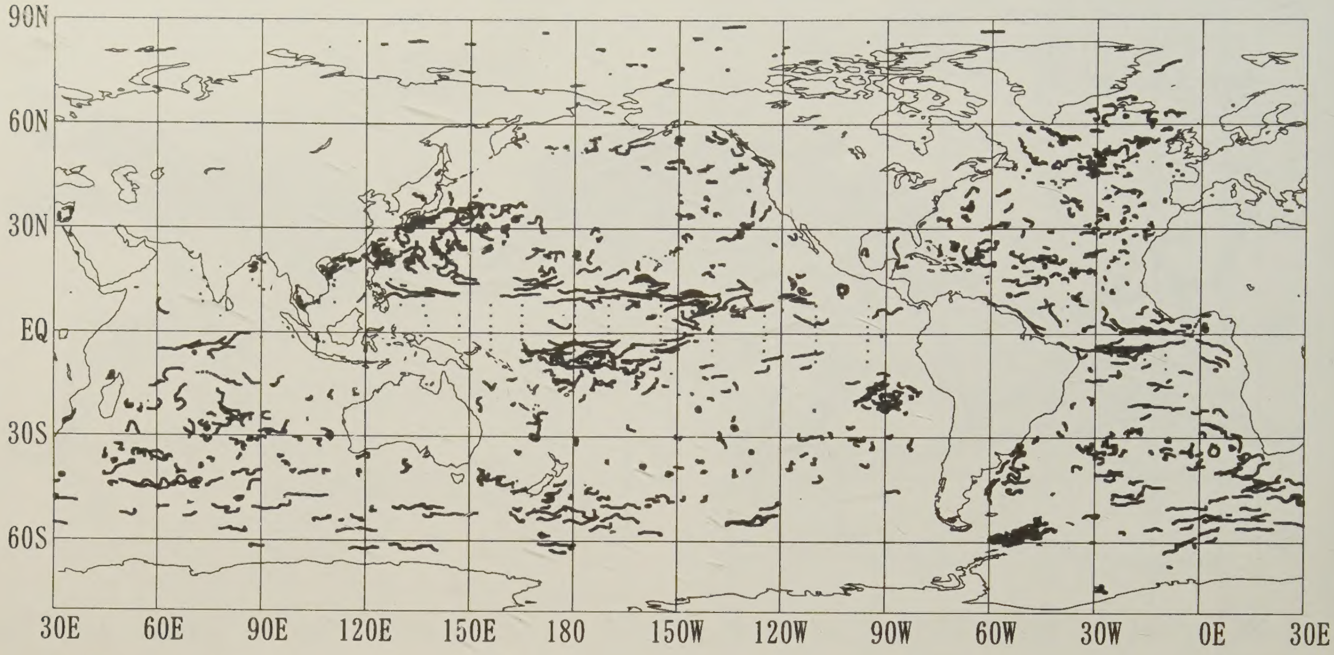
Fig. 31 Vertical sections of temperature (°C) along the PH line observed by R/V Kofu maru of Hakodate Marine Observatory and R/V Seifu maru of Maizuru Marine Observatory. (a) April 2003, (b) July 2003, (c) October 2003, (d) February 2004 and (e) location of the PH line.



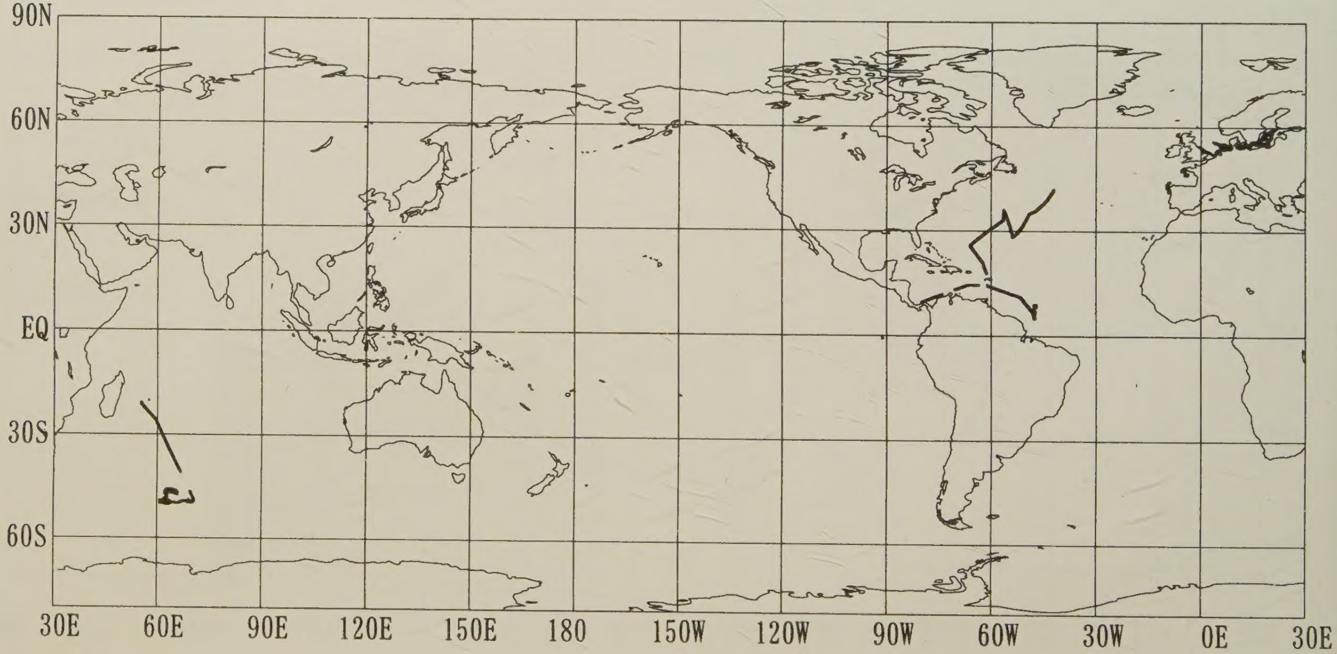


第32-1図　測点分布図(2004年 3月)

Fig. 32-1 Geographical distribution of SHIP messages (top) and BATHY/TESAC messages (bottom) for March 2004.



BUOY messages Total data:426164



TRACKOB messages Total data: 19574

第32-2図　測点分布図(2004年 3月)

Fig. 32-2 Geographical distribution of BUOY messages (top) and TRACKOB messages (bottom) for March 2004.

気　象　庁　海　洋　月　報

Monthly Ocean Report

March 2004 (No. 135)

本月報掲載の 2004 年 3 月のプロダクトには、気象庁が観測したデータ及び GTS（全球気象通信網）を通じて入手した国際気象通報式による通報のほか、下記の機関等から提供いただいたデータを使用しています。御礼申し上げます。

防衛庁、水産庁、海上保安庁

水産総合研究センター

海洋科学技術センター、（社）漁業情報サービスセンター

北海道大学、東京大学

水産試験場等（青森県、岩手県、秋田県、山形県、福島県、東京都、新潟県、富山県、福井県、静岡県、愛知県、三重県、京都府、兵庫県、和歌山県、鳥取県、島根県、山口県、徳島県、宮崎県）

（順不同）

平成１６年４月２０日発行

編集兼発行者　気　象　庁
東京都千代田区大手町１－３－４

印刷所　有限会社　進英プリント
東京都渋谷区代々木 1-38-19